Q.1 Answer any two of the following questions:
   a) Differentiate between internal and external link.
   b) Differentiate between ID and class in CSS.
   c) Explain site navigation features in detail.  

   **PART-A**

Q.2 Differentiate between external, internal and inline style sheets.  

Q.3 a) What are frames in HTML?  
   b) How are tables created and modified in HTML? 

Q.4 Write short notes on: 
   a) Database programming. 
   b) AJAX extensions. 

   **PART-B**

Q.5 Explain various controls in ASP.Net.  

Q.6 How one can design and implement web services in asp.net? 

Q.7 Differentiate between business logical layer (BLL) and Data access layer (DAL) in web services.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - First Semester
THE INFORMATION TECHNOLOGY SYSTEM (7.101)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1  a) What is application software? Give two example of application software.
     b) How cache memory is beneficial for computer system?
     c) What is Ethical hacking?
     d) What are the basic need to use MS-Office?
     e) Write short note on: e-mail.

PART-A

Q.2  a) What is the purpose and usage of storage devices in computer system? List down various storage devices with their capacity.
     b) How operating system is beneficial for computer system? Explain the characteristic of operating system.

Q.3  Write short note on:
     a) Main frame system.
     b) Personal computer.

Q.4  a) What are the basic steps to assemble a computer system?
     b) What are various ways to manage the online annoyances?

PART-B

Q.5  a) What are the various threats for the IT system? Explain the protection and prevention technique from threats.
     b) What is computer network? Explain the essential components of a network.

Q.6  Write short note on:
     a) Mobile computing.
     b) Virus and worm.

Q.7  a) What is macros? How we can use Macro and in MS-Excel?
     b) Write short notes on:
     i) Bookmark
     ii) Spell and grammar check
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - First Semester
BUSINESS COMMUNICATION (7.102)

Time: 3 hrs Max Marks: 50
No. of pages: 2

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Attempt (any ten) from the following:
Choose the correct option.

a) Feedback involves.
   i) Telling the speaker what you think of him/her.
   ii) Finishing what you have to say, before listening to what the other person has in mind.
   iii) Checking with the speaker if you understood correctly what was said.
   iv) None of the above.

b) In empathetic communication, we can:
   i) Probe.
   ii) Respond to the feelings.
   iii) Interpret.
   iv) Advise.

c) The Message should be structured in a way so that the:
   i) Receiver is able to perceive a value.
   ii) Sander says it all.
   iii) Receiver understands it all.
   iv) Sender appears unity and knowledgeable.

d) “My mind is preoccupied. I will not be able to listen accurately”. Wails Mrivalini, her boss gives her the following advice:
   i) “Jot down points while the meeting is underway”.
   ii) “Send a friend for the meeting”.
   iii) “Compose yourself and then go for the meeting”.

e) Goverdhan has realized that in a presentation.
   i) Hand movements should be used to emphasize points.
   ii) Five hand movements are just right.
   iii) Hand movements should be minimum.
   iv) None of the above.

f) Vikram Sethi, MD of PSU, has found that all employees listen to his presentation even when he rolls up his sleeve and sits on the table. His ability to garner audience attention is because of his:
   i) Audio management.
   ii) Knowledge.
   iii) Excellent PPTs.
   iv) None of the above.

g) Confidence and poise are the stepping stones for projection of assertiveness. (True/False).

h) When you interact with your team members, the best possible strategy is to yell at them and tell them that you are the boss. (True/False)

i) At the time of communicating, if you wish to figure out the thoughts in the mind of the sender, intently watch out for:
   i) Eye signals.
   iii) Hand gestures.
   iii) Body movements.
   iv) None of the above.

j) Shruti has got the habit of blinking rapidly throughout the interaction. People who observe her for the first time think that she is:
   i) Hypocritical.
   ii) Acting like a child.
iii) Lacking in confidence. iv) None of the above.
k) As soon as a class on finance begins, Rohini tunes off because of:
i) Preoccupation. ii) Stress.
iii) Lack of interest.

**PART-A**

Q.2 Elaborate on 7 C’s and 4 S’s of communication which one must follow. **10**

Q.3 a) What do you mean by business communication? What are its various components? **6**

b) Mention various barriers to communication. **4**

Q.4 a) “Listening is an art”. “People with good listening skills excel in their fields”. How much do you agree with these statements? Justify. **6**

b) Meetings are to set the due course of action for an organization. How? **4**

**PART-B**

Q.5 a) How important is written communication for an individual? What are its various forms? **6**

b) Write an email to your boss asking three days leave. **4**

Q.6 a) Differentiate between verbal and non verbal communication. **6**

b) What are the different types and form of non verbal communication? **4**

Q.7 a) Explain the role of interest in communication. **6**

b) Mention various threats to internet usage. **4**
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - First Semester
FUNDAMENTALS OF COMPUTER PROGRAMMING (7.103)

Time: 3 hrs  Max Marks: 80
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1  a) State the difference between a program and a software.
     b) What are the different types of languages encountered in history of programming language?
     c) Name the controls used in toolbox window.
     d) What is the role of solution window in visual studio?
     e) Differentiate between syntax, logical and runtime error.
     f) Differentiate between listbox and combobox.
     g) What are the basic symbols used in a flow chart?
     h) What are implicit conversions and explicit conversions?
     i) Define the variables and syntax of “if” block statement.
     j) Differentiate between string and array. 2x10

**PART-A**

Q.2  a) Explain a system development life cycle in detail. 10
     b) What are the different types of programming languages? Explain features of each language. 5

Q.3  a) Explain the difference between:
     i) Pseudo code and hierarchy chart.
     ii) Variable and constant. 5
     b) Write a program to implement the string operations. 10

Q.4  a) Define functions and also explain the difference between user defined and built-in functions with their example. 10
     b) Write short notes on:
        i) Solution window.
        ii) Property window. 5

**PART-B**

Q.5  a) Draw and explain the flow chart of Fibonacci series. 10
     b) What are different data types conversions? 5

Q.6  a) Write a program to implement pass-by-value and pass-by-reference parameters. 10
     b) Explain the use of “IF” statement in C# with the help of an example. 5

Q.7  Write the short notes on:
     a) For ---- Non-T-loop.
     b) Sub procedures and modularization.
     c) Do loops and select---case blocks. 5x3
Q.1 Explain any three:
   a) Type conversion.
   b) Conditional operator.
   c) Advantages of C#.
   d) Use of switch() statement in programming.

PART-A

Q.2 a) Explain the different phases of SDLC in detail.  
   b) What is prototype and why it is developed?

Q.3 a) What do you mean by data types? Explain the different data types in detail. 
   b) Write a short note on logical operators.

Q.4 a) What is the requirement of hierarchy chart? Draw a hierarchy chart of any problem and explain it.
   b) Name any four in-built methods and write their uses.

PART-B

Q.5 a) What do you mean by ‘Pass-by-Value’ and ‘Pass-by-Reference’? Justify your answer with an example of each.
   b) Write a short note on ‘foreach()’ statement.

Q.6 a) What is an array?
   b) How do we declare and create an array?
   c) Write one program in C# to store and display the marks obtained by 30 students in one subject using one dimensional array.
   d) What is the use of ‘catch()’ statement in debugging?

Q.7 a) What are syntax errors and semantic errors?
   b) What are the different parts of exception handling?
   c) Justify the use of finalize with an example.
   d) Name any four in-built string methods and write their uses.
Q.1 Write short notes on:
a) Database schema.
b) DBA.  

Q.2 What is normalization? Explain 2NF and 3NF with the help of a suitable example.  

Q.3 Explain various E.F. codd rules in detail.  

Q.4 What are E-R diagrams? Draw an E-R diagram of a student library.  

Q.5 Explain the need of business tools in today’s world of information technology.  

Q.6 What are joins? Explain various types of joins in SQL.  

Q.7 Write short notes on:
a) Primary and Foreign key.
b) Union and Intersection.  

PART-A

Q.2 What is normalization? Explain 2NF and 3NF with the help of a suitable example.  

Q.3 Explain various E.F. codd rules in detail.  

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PART-B

Q.5 Explain the need of business tools in today’s world of information technology.  

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Q.7 Write short notes on:
a) Primary and Foreign key.
b) Union and Intersection.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Second Semester
COMPUTER NETWORK-I (7.105)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on any two:
   a) Vector routing.
   b) Digital signature.
   c) Firewall. 5x2

   PART-A

Q.2 Explain the mechanism of cryptography and its various techniques. 10

Q.3 Discuss and compare various types of networks. 10

Q.4 How can you prevent / counter threats to a network security? 10

   PART-B

Q.5 Explain the ATM reference model and what are the various services provided by it. 10

Q.6 Discuss in detail IEEE 802.3 standard in detail. 10

Q.7 a) Name the layer of the OSI model as per the following functions performed:
      i) Reliable process to process message delivery.
      ii) Route selection.
      iii) Defines frames.
      iv) Provides user services such as e-mail and file transfer.
      v) Transmission of a bit stream across a physical medium. 5
   b) Differentiate TCP/IP model with OSI as per their salient features. 5
Q.1 Answer the following briefly:
   a) What is limited liability partnership?
   b) How competitors constitute internal environment of a business firms?
   c) What is a socialist economic system?
   d) What are indirect taxes?

   2½x4

PART-A

Q.2 What is task external environment? How does it affect business decisions of a firm?  

10

Q.3 How do suppliers affect internal environment of a firm? How can the firm build good relations with its suppliers? 

10

Q.4 What is organizational culture as a component of internal environment of a firm? How do employees get to know about the organizational culture at their workplace? 

10

PART-B

Q.5 What is an economic system? Explain salient characteristics of a capitalist economic system. 

10

Q.6 If you are the manufacturer of readymade garments on a large scale, how will you enter a foreign market? 

10

Q.7 How the developments in the field of information technology have affected the business environment of business firms? 

10
End Semester Examination, Dec. 2015  
B. Sc. (Information Technology) - First Semester  
MATHEMATICS FOR COMPUTING (7.107)

Time: 3 hrs  
Max Marks: 50  
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1  
a) Define portioning of a set with the help of an example.  
b) What is a rectangular matrix?  
c) Define an undirected graph.  
d) Give formula to calculate mean of a grouped data.  
e) What do you mean by union of two sets?  

PART - A

Q.2  
If \( f, g : R \to R \) are defined respectively by:  
\[ f(x) = x^2 + 3x + 1 \]  
\[ g(x) = 2x - 3 \]  
Find formula for the following:  
a) \( f \circ g \)  
b) \( g \circ f \)  
c) \( f \circ f \)  
d) \( g \circ g \)  
e) \( f \circ f \)  

Q.3  
If \( U = \{1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12\} \)  
\( A = \{3, 4, 5, 6\} \)  
\( B = \{1, 2, 3\} \)  
\( C = \{5, 6, 7, 8, 9, 10\} \)  
\( D = \{9, 10, 5, 12\} \)  
Find the following:  
a) \( (A - D) \cap (B \cap D) \)  
b) \( (B \cap A) \cup C' \)  
c) \( (A \cup B) \cup (B \cup D) \)  
d) \( (B - A) \cup (B \cap A) \cup C' \)  
e) \( (A' \cup B') \cup (D') \)  

Q.4  
Find the adjoint of the following matrix:  
\[ A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & -2 \\ 2 & 0 & 1 \end{bmatrix} \]  

PART - B

Q.5  
For the following data, find mean, mode and standard deviation:

<table>
<thead>
<tr>
<th>Class interval</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>10</td>
</tr>
<tr>
<td>10-20</td>
<td>15</td>
</tr>
<tr>
<td>20-30</td>
<td>20</td>
</tr>
<tr>
<td>30-40</td>
<td>31</td>
</tr>
<tr>
<td>40-50</td>
<td>28</td>
</tr>
</tbody>
</table>

Q.6  
A bag contains 7 red, 12 white and 4 green balls. What is the probability that:
Q.7 

a) Define the following terms:
   i) Adjacency matrix.
   ii) Closed circuit.
   iii) Binary tree.

b) Define a spanning tree. Draw all possible spanning trees of the graph given below:
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Third Semester
SYSTEM ANALYSIS AND DESIGN (7.201)

Time: 3 hrs  Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part-A and TWO questions from Part-B. All questions carry equal marks.

Q.1 Write short notes on (any two):
   a) Domain analysis.
   b) System analysis and design.
   c) Application flow and control design.  5x2

   **PART-A**

Q.2 Explain the various phases of system development life cycle (SDLC) in detail.  10

Q.3 What is a behavioral modeling? What are its importance? Explain its types in detail.
What do you mean by system?  10

Q.4 Describe the object oriented approach. Draw the object oriented design of a library management system.  10

   **PART-B**

Q.5 What do you mean by a system flow chart? Explain with the help of an example.  10

Q.6 How database objects and user interface are helpful in an application design? Justify your answer with an example.  10

Q.7 Write short notes on:
   a) Dynamic modeling.
   b) Component reuse.  5x2
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Second Semester
SYSTEMS TESTING (7.202)

Time: 3 hrs  
Max Marks: 40  
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Fill in the blanks:
   a) One fault may load to many _______________.
   b) Functional testing is also known as _______________.
   c) Testing process starts as soon as the _________ for the system is prepared.
   d) Testing is a process of __________ errors.
   e) Complete testing is _______________.
   f) Software mistake during coding are known as ___________.
   g) A system testing should be performed by ___________.
   h) Software quality is _______________.  1x8

PART A

Q.2  a) Explain the process of testing. 4
     b) Discuss the advantages of software testing during software development life cycle. 4

Q.3  a) Explain various quality factors for a software development process. 4
     b) Discuss the following:
        i) s/w quality control
        ii) s/w quality assurance 4

Q.4  What is functional testing and structural testing? Compare white box and black box testing techniques. 8

PART B

Q.5  Define the following with suitable example:
   a) Validation
   b) Verification 4x2

Q.6  a) Define the roll of test manager. 4
     b) Discuss various aspects of test coverage. 4

Q.7  Explain various testing standards used in organization. 8
Q.1  a) What do you mean by data and information?
    b) Define sets.
    c) What is algorithm?
    d) What do you mean by searching?

2x4

PART-A

Q.2 What do you mean by data structure? What are the various operations one can perform on data structure?

8

Q.3 Write an algorithm to perform linear search method to find an element from a list given by user.

8

Q.4 a) Define following:
    i) Disjoint sets
    ii) Null sets.
    iii) Finite sets.
    iv) Infinite sets.
    b) What do you mean by cryptography?

4

PART-B

Q.5 a) A card is drawn at random from a well shuffled pack of 52 cards. Find probability of getting:
    i) a jack
    ii) a queen
    iii) a king
    b) Define probability.

5

Q.6 Construct a tree using:
   Inorder E A C K F H D B G
   Preorder F A E K C D H G B

8

Q.7 a) Differentiate between tree and graph.
    b) Construct a binary search tree using following nodes:
       17, 16, 2, 10, 30, 27.

4
Q.1 Write short note on (any two):
   a) Abstract class.
   b) Constructor.
   c) Virtual function.

**PART-A**

Q.2 Explain all data types supported by C++.

Q.3 Differentiate the following (any two):
   a) Procedure oriented Vs. object oriented programming.
   b) C and C++.
   c) Operator overloading Vs. function overloading.

Q.4 Write a programme to declare a class ‘employee’ consisting of data members emp_no and emp_name. Write the member functions accept() to accept and display() to display the data for five employees.

**PART-B**

Q.5 Write a programme in C++ to implement the concept of single inheritance.

Q.6 What is polymorphism? Explain and give an example for compile-time polymorphism.

Q.7 Explain exception handling mechanism in C++.
End Semester Examination, Dec. 2015  
B. Sc. (Information Technology) - Fourth Semester  
DESKTOP APPLICATIONS DEVELOPMENT (7.206)

Time: 3 hrs  
Max Marks: 50  
No. of pages: 1  

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on (any two):  
a) Solution explorer.  
b) MSIL.  
c) Data encapsulation.  

PART-A

Q.2 What is ADO.NET? How is it useful in connecting the Windows application with the database?  

Q.3 a) What is the difference between data-set and data-grid-view?  
b) Write the steps to connect with database using binding source.  

Q.4 Explain the scope of different variables in VB.NET with suitable examples.  

PART-B

Q.5 "It is possible to implement tires structure system by using DLL for Windows application”. Justify the above statement with a relevant example.  

Q.6 a) How can you implement data access layers for object oriented concepts?  
b) Differentiate between visibility and scalability.  

Q.7 Differentiate between the following:  
a) If else and switch case.  
b) Inheritance and polymorphism.  

5x2
END SEMESTER EXAMINATION, DEC. 2015
B. Sc. (Information Technology) - Fourth Semester
INFORMATION SYSTEM SECURITY (7.209)

Time: 3 hrs
Max Marks: 40
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1
a) Name any five security threats.
b) Mention any two ways to authorise a user.
c) Mention two methods of risk assessment.
d) Write any two International laws in relation to security.

PART-A

Q.2 What do you understand by risk management? What are the various risk control strategies?

Q.3 What is secure SDLC? How is it related to information security? Explain with a suitable example.

Q.4 “Ethics plays an important role in information security”. Give reasons to support your answer.

PART-B

Q.5 What do you mean by information security project management? Explain its need and various technical aspects of implementing project management.

Q.6 Write short notes on:
a) Firewall.
b) Risk assessment.
c) SysSP.
d) Bull’s Eye Model.

Q.7 What is Digital forensics? What is its analysis methodology? Mention any two evidentiary procedures involved in it.
Q.1 Attempt the following:
   a) Define relational databases.
   b) List the various operations used in relational model.
   c) What is view?
   d) Define primary key with a suitable example.  

   **PART-A**

Q.2 Explain various data types used in SQL with suitable examples.  

Q.3 Explain the following commands in SQL with proper syntax and examples:
   a) Create table and insert into.
   b) Select from and count.  

Q.4 Explain various arithmetic functions used in ORACLE with their syntax.  

   **PART-B**

Q.5 Explain the various control structures used in PL/SQL code block.  

Q.6 a) Define cursor with an example.
    b) Differentiate between functions and procedures.  

Q.7 Discuss the concept of managing locks in database transactions.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Second Semester
REQUIREMENT MODELLING (7.217)

Time: 3 hrs  Max Marks: 40
No. of pages: 1  

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on any two:
   a) Information system.
   b) Eliciting requirements.
   c) Use case.
   d) Requirements completeness.  4x2

   PART-A

Q.2 What do you understand by requirement process? Explain in details.  8
Q.3 Explain in details the steps used in software development life cycle.  8
Q.4 What are the different methods to gather requirements? Explain in details.  8

   PART-B

Q.5 What do you understand by real time business problem? What are the different scenarios related to it? Explain.  8
Q.6 Differentiate between functional and non-functional requirements.  8
Q.7 Write short notes on following:
   a) Reusing requirement.
   b) Iterative development.  4x2
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Fourth Semester
OPERATING SYSTEM (7.221)

Time: 3 hrs
Max Marks: 40
No. of pages: 1

Note: Attempt **Five questions in all**: **Q.1 is compulsory**. Attempt any **TWO** questions from **Part A** and **TWO** questions from **Part B**. All questions carry equal marks.

Q.1 Short answer questions:
   a) Name purely preemptive scheduling algorithm. 1
   b) Which algorithm is used to handle multiple concurrent processes? 1
   c) Define deadlock. 1
   d) What is the role of a device controller? 1
   e) What is a system call? 2
   f) Name any four disk scheduling algorithms. 2

   **PART-A**

Q.2 a) What are the use of job queues, ready queues and device queues? 4
   b) What is multiprogramming? State objectives of multiprogramming. Enlist and explain in brief various multiprogrammed operating systems. 4

Q.3 a) What is a scheduler? Explain the various scheduling criteria in brief. 4
   b) How will you handle a deadlock using various mechanisms? 4

Q.4 Consider the following page reference string:
   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.
   How many page faults would occur for the following replacement algorithms, assuming four frames? Remember all frames are initially empty, so your first unique pages will all cost one fault each.
   ➢ LRU replacement. 8
   ➢ FIFO replacement.
   ➢ Optimal replacement.

   **PART-B**

Q.5 Explain the various memory management functions in detail. 8

Q.6 a) What is a directory? Explain the various directory structures in brief. 4
   b) Write a note about the protection strategies provided for files. 4

Q.7 When do page fault occurs? Describe the action taken by O. S. when page fault occurs. 8
Q.1  a) Name the components of a system unit.
b) Differentiate between RAM and ROM.
c) Name any three ports.
d) What is a system software?
e) What is a troubleshooting?
f) What is a cloud computing?
g) Differentiate between virus and worm.
h) Why do we use MS-EXCEL?
i) How AVERAGE is calculated in MS-EXCEL?
j) What is the software requirement for MS-PowerPoint?  

1½x10

PART-A

Q.2  a) Explain the history of computer with an example.  
b) Define and explain the components of a system unit.  

8  

7

Q.3 Define the internet. Explain different internet technologies in detail with suitable examples.  

15

Q.4 What is a computer software? Differentiate system and application software. What are the types of system and application software available in the market?  

15

PART-B

Q.5  a) What are the features of MS-OFFICE? How it helps in routine life?  
b) What is the purpose of Mail Merge? Write the steps involved in Mail Merge for a letter.  

7  

8

Q.6 What is mobile computing? What are different devices for mobile computing? What are the limitation and benefits of the same?  

15

Q.7 Write short note on:
a) IF, Nested If, COUNT, COUNTIF, COUNTIFS.
b) Goal seek.
c) Database and relational database.  

5x3
Q.1 Write short notes on (any four):
   a) Informative reports.
   b) Importance of graphics in an audio visual presentation.
   c) Research.
   d) Executive summary.
   e) Importance of correct language in report writing.  

PART A

Q.2 Explain how a design proposal is different from a project report.  

Q.3 Describe the 4 P’s of presentation with the help of a suitable example of interior designing.  

Q.4 What are the different research and data collection techniques? Discuss some advantages of online survey.  

PART B

Q.5 Prepare a presentation outline for a modular kitchen design company named ‘Sleek Kitchens’ which is opening a new showroom in Delhi. (Present necessary details on your own, like: Name, address and types of furniture etc).  

Q.6 What are the different techniques you will use to make a presentation more effective?  

Q.7 What are the various elements of a good presentation? Describe how you can use multimedia to make your presentation effective?  

Q.1 Imagine you are a professional color consultant. Based on your knowledge of the psychological effect color has on people, what colors (Warm, Cool or Neutral) would you use in each of the following spaces, and justify why?
   a) Children’s bedroom.
   b) Hospital.
   c) A small bedroom for older adults.
**PART-A**

Q.2 Represent a composition in two different ways; one using two analogous colors (with only one of them a primary color) and second using two complementary colors.  

Q.3 Draw a composition showing balance through color.  

Q.4 What factors influence the way color harmonies are used in planning an interior design?  

**PART-B**

Q.5 Write short notes on *any two* of the following with sketches:  
   a) Faber barren triangle.  
   b) Chiaroscuro.  
   c) Color and focal point.  
   d) Color dimensions.  

Q.6 Discuss briefly the color trends in any two recognised historical periods.  

Q.7 Discuss the factors that leads color to have a psychological impact on people.
Q.1 Explain any four of the following terms with suitable examples:
   a) Line.
   b) Point.
   c) Plane.
   d) Volume.
   e) Scale.

   **PART-A**

Q.2 What do you understand by transformation of form? Explain its types with sketches and suitable examples.

Q.3 a) What do you understand by color contrast? Explain warm and cool colors in brief.
    b) How can color help to change the environment of an interior space?

Q.4 In a square tile of 30 cms side, draw an interesting composition with 4 circles, 4 squares, 4 lines and 4 rectangles and colour them.

   **PART-B**

Q.5 What do you understand by the following terms?
   a) Proportion.
   b) Balance.
   c) Harmony.
   d) Rhythm.

Q.6 Describe the cultural differences in interior spaces as a result of impact of environment with two examples.

Q.7 Draw any one pattern from the following themes in a square of 30 cm side:
   a) Indian.
   b) Egyptian.
   c) Chinese.
End Semester Examination, Dec. 2015  
B. Sc. (Interior Design) - First Semester  
HISTORY OF FURNITURE-I (351.105)

Time: 3 hrs  
Max Marks: 40  
No. of pages: 1

Note: **Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B.**

Q.1 Briefly describe the terms with example any four of the following:  
a) Carving.  
b) Intersia.  
c) Klismos.  
d) Papyrus.  
e) Frescos.  
f) Gilding.  
g) Entablature.

**PART-A**

Q.2 ‘Heavy and complex carving was done on the multipurpose furniture of middle ages’. Justify the statement with suitable furniture example of this era.  

Q.3 Discuss in detail salient features of Roman culture and furniture with an appropriate furniture sketch.  

Q.4 Egyptian civilization is considered as the most important civilization in history. Discuss about its culture and furniture along with identifying characteristics and a suitable example.  

**PART-B**

Q.5 Discuss in detail LOUIS XV along with the key features of furniture with a neat sketch.  

Q.6 Renaissance is defined as rebirth. Give reasons in support of your answer with a suitable example.  

Q.7 During Queen Anne style English furniture makers developed a distinctive style. Give details of this era along with key features and a furniture sketch.
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - First Semester
COMMUNICATION-I (351.107)

Time: 3 hrs Max Marks: **40**
No. of pages: **1**

Note: Attempt **FIVE** question in all; **Q.1** is compulsory. Attempt any **TWO** questions from **Part A** and **TWO** questions from **Part B**. Each question carries equal marks.

Q.1 Write short notes on **any four**:
  a) Active listening.
  b) Audience analysis.
  c) Effective communication.
  d) E-mail.
  e) Body language. **2x4**

**PART-A**

Q.2 Write a paragraph on **any two** of the following:
  a) My best friend.
  b) Increasing use of mobile phones.
  c) Time management. **4x2**

Q.3 What is the importance of written communication? Consider this: You are the president of your college’s “Fine Arts” club. You along with your team have decided to organize a cultural festival on 25th Feb, 2016 and feel that at least 100 student volunteers will be required to make the arrangements. Write a formal letter inviting applications from the students of your college, giving details of the event and the selection process to shortlist 100 students. Get creative and add additional points if desired. **8**

Q.4 Why is listening important for effective communication? What are the different types of listening? **8**

**PART-B**

Q.5 What are the different barriers in the process of listening? **8**

Q.6 Discuss different online research methods (ORMs). **8**

Q.7 What are the different steps involved in writing an e-mail? **8**
Note: **Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B.**

Q.1 Write short notes **any four** with examples on the following:
   a) Metal.
   b) Granite.
   c) Plywood.
   d) Paint.
   e) Wall Paper.
   f) Suede.

**PART-A**

Q.2 Discuss the various types of floorings. What points you will consider before providing a flooring in a living room.  

Q.3 Discuss the various types of wood. Describe the seasoning process of wood.  

Q.4 Discuss various type of paints and their impact on environment.  

**PART-B**

Q.5 Discuss the various types of wall coverings and briefly explain the application process/method of any one wall covering.  

Q.6 Discuss briefly various types of metal finishes/metals. Which can be used as finish in interior? Give suitable example.  

Q.7 Briefly define imitation leather. Give its environmental impact and depict examples in 4x4 cm block.
End Semester Examination, Dec. 2015  
B. Sc. (Interior Design) - First Semester  
MATERIALS AND FINISHES-I (351.108)

Time: 3 hrs  
Max Marks: 40  
No. of pages: 1

Note: **Q.1 is compulsory. Attempt any THREE questions from the remaining FOUR. Each question carries equal marks.**

Q.1 Write short notes on the following along with sketches (if required):
   a) Veneering and cutting methods.  
   b) Electroplating.  
   c) Wallpaper and its types.  
   d) Sustainable materials – selection criteria.  
   e) Rotogravure and Inlaid Vinyl sheeting.  
   f) Seasoning of wood.  
   g) Cut-pile, loop pile and cut and loop pile carpets.  
   h) Leather and suede.  

Q.2 Write about metals and its properties. Explain any one mechanical method of joining metals with a neat sketch.  

Q.3 Classify floor covering materials. Mention the characteristics, advantages and disadvantages of one type of floor covering material.  

Q.4 a) Define paint. Briefly mention about the ingredients in paint.  
   b) Estimate the costing of painting four walls of a room with a door opening of 1m x 2.1m and a window measuring 2m x 1.5m. The cost of painting inclusive labour is Rs. 300/- per sq.m.  

Q.5 Explain in detail the processing of wood and discuss its impact on the environment.
Q.1 Demonstrate how different styles of furniture can work in the same interior spaces. Explain your answer by giving an example.  

**PART-A**

Q.2 Discuss the works of any two designers and how their ideas have influenced furniture of 21st century.  

Q.3 Compare any two different styles in specific time period. Give examples of furniture pieces of that period also.  

Q.4 Draw two furniture pieces designed by any two different designers:  
a) Chippendale.  
b) Sheraton.  
c) Queen Anne.  

**PART-B**

Q.5 “Furniture construction changes over the decades due to socioeconomic reasons”. Discuss this statement.  

Q.6 a) Describe recycled furniture and its uses in today’s society.  
b) Identify materials that can be used to make recycled furniture.  

Q.7 Draw furniture pieces (2 Nos) from the Art Nouveau period.
Q.1 Write short notes on any four of the following:
   a) Executive summary.
   b) Importance of punctuation marks.
   c) Bibliography.
   d) Business proposal.
   e) Management plan.
   f) Price quotations.

**PART-A**

Q.2 Write a paragraph on the following topics (any two):
   a) Time management.
   b) Non verbal communication makes communication effective.
   c) Interior design as a career option.

Q.3 Prepare an outline of presentation on any one of the following topics:
   “Physical fitness”
   OR
   “Self discipline and perseverance”

**Directions:**
1. Prepare at least 10 slides (Draw boxes on sheet)
2. Include the introduction, body and conclusion.
3. Focus on:
   a) Using pointers.
   b) Clarity of thoughts.
   c) Organization of content.

Q.4 As a freelance interior designer with flourishing business in Delhi and NCR, write a letter of enquiry to a reputed furniture supplier showcasing the reason for interest and possible types and size of orders; and enquiring about prices of products and discounts available.

**PART-B**

Q.5 What are the different barriers to listening? How can one become an effective listener?

Q.6 How do you go about preparing for an effective business presentation?

Q.7 You are the manager of an interior designing firm that has decided to participate in “Design the perfect Metro Station for Pune Network” competition being organized by the Maharashtrian Government. Draft a memo for calling an urgent meeting to brief your team about the competition. Use your imagination and creativity to give additional information.
End Semester Examination, Dec. 2015  
B. Sc. (Interior Design) - Second Semester  
MATERIAL AND FINISHES-II (351.209)

Time: 3 hrs  
Max Marks: 40  
No. of pages: 1

Note: Attempt FIVE question in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Define any four of the following with suitable examples:
   a) Wearing.
   b) Natural fibers.
   c) Looped pile carpet.
   d) Tufting.
   e) Soft furnishings.  

   **PART-A**

Q.2 What are manmade fibers? Explain various manmade fibers in brief.  

Q.3 What are yarns? Specify different types of yarns.  

Q.4 Discuss the production method used in any one type of textile.  

   **PART-B**

Q.5 Explain how would you calculate lineal feet while estimating wallpaper for the wall size 18'-0"x10'-0. The width of wallpaper roll is 2'-6".  

Q.6 What do you understand by aesthetic finishes in textiles? Explain various types of aesthetic finishes in detail.  

Q.7 Specify some environmental friendly materials used in interior design with their salient features.
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Second Semester
GENERAL EDUCATION (351.210)

Time: 3 hrs
Max Marks: 40
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Write short notes on (any two):
   a) Audience analysis in presentation.
   b) Pronunciation.
   c) Memo.
   d) Body language. 4x2

PART-A

Q.2 Explain the communication process and its importance at work in detail. 8
Q.3 What preparations would you do before an interview? 8
Q.4 Explain the do’s and don’ts of a group discussion. 8

PART-B

Q.5 Explain the “Ten commandments of presentations”. 8
Q.6 How can one develop their listening skills? List out the listening dos and don’ts in brief? 8

Q.7 Express your views on (any two) of the following:
   a) Digital India.
   b) Your career aspirations.
   c) Women empowerment.
   d) India 2020. 4x2
Q.1 Define the term with sketches (any four):
   a) Headings.
   b) Upholstery.
   c) Qualities of bedding.
   d) Swags.
   e) French pleat.
   f) Café curtains.  

**PART-A**

Q.2 Discuss the functions of Window. Prepare neat and fully rendered sketches of any two types of Window treatments  

Q.3 Define blinds and its types with proper sketches.  

Q.4 Explain global trends in Window treatments.  

**PART-B**

Q.5 Explain different types of throw pillows, table linens and reupholstering of furniture.  

Q.6 Compare the advantages and disadvantages of reupholstering of furniture.  

Q.7 Create proposal for a table (1.8 m x 1.2 m) covering including cost of materials and labor.
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Third Semester
PSYCHOLOGY (351.302)

Time: 3 hrs
Max Marks: 40
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each questions carry equal marks.

Q.1 Choose the correct answers any eight of the following:
   a) Which is not part of the five basic goals of psychology?
      i) Describe.
      ii) Research.
      iii) Predict.
      iv) Control.
   b) What is psychology?
      i) The attempt to control, predict and explain behavior.
      ii) The research of the human condition.
      iii) The study of predicting, researching and controlling of the human psyche.
      iv) The study of cognitions, emotions and behavior.
   c) Psychoanalysis is both a theory of personality and a therapy for the mental treatment of mental disorders:
      i) True.
      ii) False.
      iii) A times true and at other times false.
      iv) Debatable.
   d) Freud considered the _____ to be he primary motivating force of our behavior:
      i) Id.
      ii) Ego.
      iii) Unconscious.
      iv) Conscious.
   e) The part of your personality that makes you want to eat, drink and party is your:
      i) Id.
      ii) Ego.
      iii) Superego
      iv) Conscious.
   f) You just found a wallet at the phone booth at school. What part of your personality would urge you to turn it to security?
      i) Id.
      ii) Ego.
      iii) Superego.
      iv) Conscious.
   g) Which part of your personality must determine the most appropriate ways and means of satisfying your biological urges?
      i) Id.
      ii) Ego.
      iii) Superego.
      iv) Conscious.
   h) Which is not a dimension of personality according to the Myers Briggs?
      i) Neuroticism.
      ii) Extraversion.
      iii) Feeling
      iv) Judging.
   i) A stable enduring quality that a person shows in most situations is:
      i) Personality type.
      ii) Personality trait.
      iii) Self concept.
      iv) Personality.
   j) The big five factor model of personality does not measure:
      i) Agreeableness.
      ii) Neuroticism.
      iii) Intuition.
      iv) Conscientiousness.

PART-A

Q.2 a) Discuss in detail three levels of human experiences given by Freud.
   b) Give four major perspectives of personality theory given by various theorists. 4x2

Q.3 Define psychology. Discuss its goals with examples. 8
Q.4 Write short notes on any two:
   a) Psychoanalysis.
   b) Cognitive theory.
   c) Learning theory.
   d) Memory.

PART-B

Q.5 Discuss psychological and mental disorders in detail.  8

Q.6 Discuss developmental stages given by Erik Erikson in detail.  8

Q.7 Write short notes on any two:
   a) Body Image in media.
   b) Emotion.
   c) Forgetting.  4x2
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Third Semester
LIGHTING (351.305)

Time: 3 hrs                                           Max Marks: 40
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each questions carry equal marks.

Q.1 Discuss (any four) with the help of neat sketches:
   a) Types of light fixtures used for a residence.
   b) What is lumen?
   c) What do you understand by a lighting plan?
   d) What is “Task Lighting”?
   e) Enumerate energy saving techniques for an office as an interior project. 2x4

PART-A

Q.2 Explain the important considerations to be kept in mind while designing a lighting scheme for a residence. 8

Q.3 How can one create different “Moods” in different rooms of a residence purely by using various lighting techniques? 8

Q.4 Explain the effects of lighting on colours of walls, fabric, carpet etc in detail. 8

PART-B

Q.5 Explain the importance and use of decorative lights for a luxurious residential bungalow. 8

Q.6 Draw sketches of lighting symbols used in a lighting plan and name them. 8

Q.7 How will you ensure the correct level of lighting, necessary for different activities like sleeping, dining, working etc? 8
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Third Semester
MARKETING TECHNIQUES (351.307)

Time: 3 hrs Max Marks: 40
No. of pages: 1

Note: Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B.

Q.1 Differentiate between any two of the following:
   a) Product concept and production concept.
   b) Bait pricing and price lining policy.
   c) Marketing and selling.
   d) Advertising and sales promotion.  

   4x2

PART-A

Q.2 Explain SWOT analysis in detail with the help of an example. Elaborate the various types of competitors.  

   8

Q.3 Describe the various stages in a product’s life cycle and also mention some of the marketing strategies which could be incorporated at various stages.  

   8

Q.4 Visualize how technology will change the market place in the year 2015. Now in this market place, visualize yourself as a consumer. Describe whether your experience in this market place would be one of the happy or confused consumers. Explain and justify your answer.  

   8

PART-B

Q.5 There are number of ways of positioning a brand. Identify at least two brands that exemplify any four of the positioning strategies given below:
   a) Attribute positioning.
   b) User positioning.
   c) Price/quality positioning.
   d) Usage positioning.
   e) Use/application positioning.  

   2x4

Q.6 Define marketing research. Explain in brief the various elements of marketing research process.  

   8

Q.7 ‘Everyone talks about the fact that customers are central to the company and need focus and attention’. Explain in your own words why the customer is so important. Illustrate your answer with suitable examples to show your understanding.  

   8
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Fourth Semester
BUSINESS SKILLS FOR DECORATORS (351.401)

Time: 3 hrs
Max Marks: 40
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carry equal marks.

Q.1 Explain (any four) in brief:
   a) Trade sources.
   b) Proposed contact.
   c) Basic managerial roles.
   d) Whole sale price.
   e) Interior design.

   PART-A

Q.2 a) Explain the various phases involved in managing interior designing projects.
   b) Discuss the importance of interior designer being updated with current market scenario.

Q.3 a) Why is working portfolio required for interior designers?
   b) Prepare an outline of a portfolio.

Q.4 Explain interior design contract. Briefly discuss all forms of interior design contract.

   PART-B

Q.5 a) Explain the different methods used by an interior designer to charge the client.
   b) Discuss the advantages and disadvantages of various methods used by an interior designer to charge the client.

Q.6 a) Explain the various requirements of a decorating contract.
   b) Discuss the effective forms of decorating and designing contract.

Q.7 a) Explain any two of the following:
   i) Agreement and contract.
   ii) Supplier and resources available for decorating trade.
   iii) Operating expenses.
   b) Discuss the importance of cover letter and resume. What is the difference between the two? Make a sample resume highlighting the capabilities.
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) – Fifth Semester
ESTIMATION AND PROFESSIONAL PRACTICE (351.501)

Time: 3 hrs
Max Marks: 40
No. of pages: 1

Note: Attempt FIVE question in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Write short notes on any four of the following:
   a) Interior design consultancy as a profession.
   b) Ethics in the profession of interior design consultancy.
   c) How do you decide on a design fee?
   d) Basic elements of a contract.
   e) Useful promotional tools for interior design consultancy. 2x4

**PART-A**

Q.2 What are the essentials of professional conduct of an interior designer? 8

Q.3 Explain the different types of cost estimates which can be preferred for an office interior project. 8

Q.4 Explain various methods of calculating the design fee for interior design consultancy for a residence renovation project. 8

**PART-B**

Q.5 What is a contract? Explain its types and relative importance. 8

Q.6 What is a tender? List and explain its important contents in detail. 8

Q.7 Explain the role of public relations for a successful interior design consultancy practice. 8
End Semester Examination, Dec. 2015
B. Sc. (Interior Design) - Sixth Semester
INTERNATIONAL TRENDS (351.601)

Time: 3 hrs  Max Marks: 40
No. of pages: 1

Note: Attempt FIVE question in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Define the global styles furniture with sketches of European, African and Asian with its three basic components. 8

PART-A

Q.2 Discuss accessories used as an art material selected from India and available in international market. 8

Q.3 Explain colour trends with two pro and cons. 8

Q.4 Write short notes on any two:
   a) Real leather.
   b) Cotton.
   c) Suede.
   d) Silk. 2x4

PART-B

Q.5 Explain with neat sketches “Green Design” does mean the “colour green”. Is it means designing of eco friendly interiors? Comment. 8

Q.6 How interior designing has a lot to contribute in recycling? Explain. 8

Q.7 Explain origin, early instruments and techniques of Feng Shui. 8
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Sixth Semester
PERSONALITY DEVELOPMENT-6 (369.609)

Time: 3 hrs Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on any two:
   a) Group discussion.
   b) Non-verbal communication.
   c) Importance of documentation. 5x2

   PART-A

Q.2 “How you say something is more important than what you say”. Elaborate. 10
Q.3 What is active listening? How can one become an effective listener? 10
Q.4 Describe in detail the process of communication. 10

   PART-B

Q.5 Briefly describe what are case based and topic based group discussions. Discuss in details the Do’s & Don’ts of a group discussion. 10
Q.6 Think of our dream job in your dream company. Imagine the company has come to your college for recruitment. Prepare a Cv and covering letter for the same. 10
Q.7 Write about things you would take care at the time of appearing for your job interview. 10
End Semester Examination, Dec. 2015  
B. Sc. (Information Technology) - First Semester  
FUNDAMENTALS PRINCIPLES OF COMPUTER PROGRAMMING  
(369.103)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1  

Note: Attempt **FIVE** questions in all; **Q.1 is compulsory**. Attempt any **TWO** questions from **Part A** and **TWO** questions from **Part B**. All questions carry equal marks.

Q.1  
a) Differentiate between syntax error and logical error.  
b) Differentiate between procedural programming and event driven programming.  
c) Explain various data type available in C#.  
d) What is the difference between pass by value and pass by reference method?  
e) How one dimensional array is created and accessed in C#?  

**PART-A**

Q.2  
a) Explain the purpose of the following:  
   i) Property window.  
   ii) Server explorer windows.  
   iii) Source code windows.  
   iv) Design windows.  
b) Explain the different features of C#.  

**PART-B**

Q.3  
a) What do you understand by system development life cycle? Explain the different stages of SDLC.  
b) What do you mean by event driven language?  

Q.4  
a) Give five inbuilt functions in C# with an example.  
b) Write short notes on:  
   i) Data type conversion.  
   ii) Flow chart.  

Q.5  
a) What is array? Write a program to implement transpose of a matrix in C#.  
b) Write a program to handle divide by zero exception in C++.  

Q.6  
a) Define do loops in C#.  
b) Write a menu driven program for performing addition, subtraction and multiplication using switch case.  

Q.7  
a) Write a program to search an element in a linear array.  
b) What is a recursive procedure in C#? Explain with the help of a relevant example.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - First Semester
BASIC MATHEMATICS (369.104)

Time: 3 hrs  
Max Marks: 75

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1  
(a) Write the following sets in roster form:  
   i) \( A = \{x: 3 < x < 4, x \in \mathbb{N}\} \)  
   ii) \( B = \{x: x^2 = 9, x \in \mathbb{N}\} \)  
(b) Define a function with the help of an example.  
(c) Define a graph  
(d) Define null matrix, scalar matrix and transpose of matrix.  
(e) What are the formulae for mean, median and standard deviation?  
(f) What is addition rule of probability?

Q.2  
Given \( U = \{x: x \text{ is a natural number}\} \), \( B = \{2x: x \in \mathbb{U}\} \) and \( C = \{2x+1: x \in \mathbb{U}\} \)  
Find:  
   i) \( B \)  
   ii) \( C \)  
   iii) \( B \cup C \)  
   iv) \( B \cap C \)  
   v) \( \cup \neg C \)  

Q.3  
(a) Find the inverse of the matrix \( A \):  
\[
A = \begin{bmatrix}
1 & 1 & 3 \\
1 & 3 & -3 \\
-2 & -4 & -4
\end{bmatrix}
\]
(b) Find the rank of matrix \( A \):  
\[
A = \begin{bmatrix}
1 & 2 & 3 \\
2 & 3 & 4 \\
3 & 4 & 5
\end{bmatrix}
\]

Q.4  
(a) Find the domain and range of the following function:  
\( y = \sqrt{x}, x \geq 0 \)  
(b) Which of the following functions are odd and which are even?  
   i) \( y = 3x^4 - 5x^2 + 6 \)  
   ii) \( y = 2x^3 + 5x \)

Q.5  
(a) What is probability? What is meant by mutually exclusive events?  
(b) Three balls are drawn at random from a basket containing 6 blue and 4 red balls. What is the chance that two balls are blue and one is red?

Q.6  
For the following frequency table, calculate mean, median and mode:

<table>
<thead>
<tr>
<th>Monthly rent (Rs.)</th>
<th>No. of persons paying the rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000-10,0000</td>
<td>6</td>
</tr>
<tr>
<td>10,000-15,000</td>
<td>9</td>
</tr>
<tr>
<td>15,000-20,000</td>
<td>11</td>
</tr>
<tr>
<td>20,000-25,000</td>
<td>14</td>
</tr>
<tr>
<td>25,000-30,000</td>
<td>20</td>
</tr>
</tbody>
</table>

\[\text{7}\]
Q.7  a) Explain the following terms along with the example:
   i) Directed graph
   ii) Binary tree
   iii) Path
   iv) Adjacency matrix.

b) Write adjacency matrix of the graph:

Fig. 7
Q.1 Write short notes on any three:
   a) Number system.
   b) Gray code.
   c) Instruction format.
   d) Subroutines.

**PART-A**

Q.2 What is a number system? Explain the various types of number systems.

Q.3 What are error correction code? Explain hamming code with an example.

Q.4 Explain the various operators with their truth table.

**PART-B**

Q.5 What are addressing modes? Explain.

Q.6 What are asynchronous data transfer? Explain.

Q.7 What is DMA? Explain DMA transfer in detail.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Third Semester
COMPUTER ALGORITHMS AND DISCRETE MATHEMATICS (369.301)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt **FIVE** questions in all; **Q.1 is compulsory**. Attempt any **TWO** questions from **Part A** and **TWO** questions from **Part B**. All questions carry equal marks.

Q.1 Attempt **any three**:

a) Find the inverse of a matrix \( A = \begin{bmatrix} p & q \\ r & s \end{bmatrix} \) where \( ps - qr \neq 0 \).

b) A man has six friends. In how many ways may he invite one or more of them to dinner?

c) Expand \( \tan x \) is power of \( \left( x - \frac{\pi}{4} \right) \) upto four terms.

d) Show that \( \lim_{n \to \infty} (\sqrt{n+1} - \sqrt{n}) = 0 \).

**PART-A**

Q.2

a) Prove that if set \( A \) and \( B \) are neighbourhoods of a point \( \varepsilon \) then \( A \cap B \) is also a neighbourhood of \( \varepsilon \).

b) show that if \( B \) is a countable subset of an uncountable set \( A \) then \( A - B \) is uncountable.

c) Prove that the set of all irrational number is uncountable.

Q.3

a) In how many ways can 5 men and 4 women be seated in a row so that the woman occupy the even places.

b) Find the inverse of the matrix \( \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix} \) and verify that \( A \cdot A^{-1} = A^{-1} \cdot A = I \).

Q.4

a) Solve the equation:

\[
\begin{vmatrix}
 x - 2 & 2x - 3 & 3x - 4 \\
 x - 4 & 2x - 9 & 3x - 16 \\
 x - 8 & 2x - 27 & 3x - 64 \\
\end{vmatrix} = 0
\]

b) Find the rank of the matrix \( A = \begin{bmatrix} 3 & 2 & -1 \\ 4 & 2 & 6 \\ 7 & 4 & 5 \end{bmatrix} \)

**PART-B**

Q.5

a) State and discuss the working rule of Cauchy’s second theorem on limits.

b) Show that the series \( \frac{1}{3} + \frac{1}{3^2} + \frac{1}{3^3} + \ldots \) converges.
Q.6  

a) If \( f(x) = x^3 + 2x^2 - 5x + 11 \), find the value of \( f\left(\frac{9}{10}\right) \) with the help of Taylor’s series for \( f(x+h) \).

b) Expand \( \sin(e^x - 1) \) up to and including the term of \( x^4 \).

10

5

Q.7  

a) Give the statement and proof of the ‘fifth’ form of comparison test of two series.

b) Show that the series \( \sum_{n=1}^{\infty} \frac{1}{3^n + x}, \quad x > 0 \) is convergent.

10

5
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Third Semester
OBJECT ORIENTED PROGRAMMING-I (369.302)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 a) Define operator overloading with example.
b) What is object, class and method?
c) How to declare a method with a parameter?
d) What is constructors and destructors?
e) What is polymorphism and exception handling? 3x5

PART-A

Q.2 a) What are the advantages of object oriented programming over procedural programming?
b) What would you consider the principal objectives of oops?
c) What is encapsulation? How it is implemented in C++? 5x3

Q.3 a) When will you make a function inline and why? Illustrate it with example.
b) Explain the ways of defining member function in C++ with the help of example.
c) What is the difference between struct and a class in C++? 3

Q.4 a) Define the term data hiding in the context of object oriented programming. Give an example using C++ to illustrate the same.
b) Define data types in C++.
c) What is the difference between call by value and call by reference? Also write the program to implement same. 5 3 7

PART-B

Q.5 a) Write a program to compute the area of a triangle and a circle by overloading the area().
b) What do you understand by constructor and destructor functions used in classes? How are these functions different from other member function? 8 7

Q.6 a) Name the different forms of inheritance. How are they different from one another?
b) What is base class, derived class and abstract class? Write a program to implement the same. 8 7

Q.7 a) What does polymorphism mean in C++? How is polymorphism achieved at (i) compile time, and (ii) run time?
b) Write a program to handle divide by zero exception handling. 8 7
Q.1 Answer any three:
   a) Internet working.
   b) IP packets.
   c) Distributed application.
   d) Bluetooth
   e) Virtual networks.

   PART-A

Q.2 What is computer network? What are the different types of networks available? Explain all the networks in detail with the help of suitable diagrams.

Q.3 a) Explain transport layer in detail of TCP/IP model.
    b) Explain OSI model in detail with the help of suitable diagram.

Q.4 a) What are the different internet protocols? Explain all in detail.
    b) What is the difference between synchronous transmission and asynchronous transmission?

   PART-B

Q.5 What are the different transmission mediums available in the networking? Explain the difference between guided and unguided media?

Q.6 a) What is congestion control? Explain any three congestion control techniques in detail.
    b) What is the difference between flooding and flow control?

Q.7 a) What is network security? How security elements are helpful in the security of data?
    b) Differentiate between following:
       i) Intranet and extranet
       ii) Encryption and decryption.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Third Semester
PROGRAMMING WITH VISUAL STUDIO (369.304)

Time: 3 hrs                        Max Marks: 75
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on any three:
   a) Data types of VB.Net.
   b) Project explorer.
   c) MsgBox.
   d) Features of VB.net

   PART-A

Q.2 a) Write the difference between procedure oriented programming and event driven programming.
     b) Differentiate between variables and constants using some suitable example.

Q.3 What do you mean by form in VB.net? Explain the connectivity process with MS Access in VB.net.

Q.4 a) Explain all control statements of VB.net using suitable examples.
     b) Explain the scope of variable in detail.

   PART-B

Q.5 a) What is the difference between list box and combo box?
     b) What is the significance of frame and directory list box in VB.net?

Q.6 Explain the following:
   a) Data grid control.
   b) Error handling.
   c) IDE environment.

Q.7 a) What do you mean by control array? How it is different from ordinary array?
     b) Differentiate between data control and data grid control.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Fourth Semester
WEB DEVELOPMENT WITH WEB TECHNIQUES (369.401)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short note on any three out of four:
a) Heading tags (H1 to H6).
b) Why HTML was created?
c) Server side controls.
d) Write any five ASP.NET controls.

PART-A

Q.2 Design the below given web page using HTML:

Q.3 Write short note on:
a) How to use images in HTML?
b) How to use frames in HTML?
c) Tags available for text formatting.

Q.4 Design the below given table using HTML tags:

My Table

<table>
<thead>
<tr>
<th>S.No.</th>
<th>MCA</th>
<th>MCA (L)</th>
<th>BCA</th>
<th>B.Sc. (IT)</th>
<th>Ph.D</th>
</tr>
</thead>
<tbody>
<tr>
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<td>20</td>
<td>10</td>
<td>16</td>
<td>14</td>
<td>05</td>
</tr>
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<td>02</td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>30</td>
<td>12</td>
<td>06</td>
<td>01</td>
</tr>
</tbody>
</table>
PART-B

Q.5  a) What is a web server?  
     b) Write all the step to install IIS.  

Q.6 Write short note on the following:  
     a) Connection class of ADO.NET.  
     b) Command class of ADO.NET.  
     c) Data adaptor of ADO.NET.  

Q.7  a) What are the advantages of disconnected database?  
     b) Explain ADO.NET architecture in detail.
End Semester Examination, Dec. 2015  
B. Sc. (Information Technology) - Fifth Semester  
SOFTWARE QUALITY ASSURANCE AND TESTING (369.509)

Time: 3 hrs  
Max Marks: 50  
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 a) Define error, fault and defects in testing.
b) What is black box testing approach?
c) What is software metric? Define MTTF.
d) Why there is a need of quality assurance?
e) What is cyclomatic complexity.  

2x5

PART-A

Q.2 a) What is the testing process? How can it be implemented? What are the limitations?

b) Differentiate between testing, quality assurance and quality control with suitable example. 5

Q.3 a) What is testing life cycle? Define its roles and activities.

b) Define measure, measurement and metrics. Also what should we measure during testing. 5

Q.4 a) What is the white box approach for testing? Explain the same with terms test adequacy criteria, coverage and control flow graphs.

b) Write the following concept with suitable example.
i) Path testing
ii) Loop testing
iii) Mutation testing 5

PART-B

Q.5 a) Differentiate between:
i) Verification and validation.
ii) White box testing and black box testing. 5

b) What is software reliability? Described the following term?
i) MTBF
ii) MTTF
iii) Defect density. 5

Q.6 a) Why is quality important in software? Explain the cost and benefits of the same. 5

b) What are different SQA tools? Give suitable example. 5

Q.7 Write a short note on:
a) ISO 9000 and 9001
b) Functional testing 5x2
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Sixth Semester
MOBILE COMMUNICATION (369.606)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on:
   a) Mobile IP. 3
   b) TCP/IP. 3
   c) GSM. 4

PART-A

Q.2 What is a wireless communication? How is it different from a wired communication? Give an example. 10

Q.3 a) What are the different types of multiplexing techniques? 5
    b) Explain medium access control. 5

Q.4 a) Explain the system architecture of digital mobile.
    b) What are the different types of wireless data techniques? 5x2

PART-B

Q.5 What is wireless LAN? What are the advantages and disadvantages of wireless LAN? Explain in detail. 10

Q.6 a) Differentiate between snooping TCP and mobile TCP?
    b) Explain the architecture of wireless application protocol. 5x2

Q.7 Explain the following:
   a) Ad-hoc networks.
   b) Palm OS.
   c) Memory management. 5x2
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Sixth Semester
PROGRAMMING WITH JAVA (369.607)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Answer any two:
a) Compare: while and do while.
b) What is scope of a variable?
c) Why is java known as platform-neutral language?
d) ‘Java is free form language’. Comment. 5x2

PART-A

Q.2 a) Explain the importance of JVM in Java programming. 5
b) Explain all features of Java. 5

Q.3 What is an array? How array are declared in Java? Write a program to find the smallest number in 10 elements by using array. 10

Q.4 What is a construction? What are its special properties? Explain types of constructors with examples. 10

PART-B

Q.5 Discuss the Java error handling mechanism in detail. What is the difference between runtime and compile time error? 10

Q.6 What is the difference between final( ), finalize( ); and finally( ) in Java. Explain with examples. 10

Q.7 Write applets to draw the following shapes;
a) Cone         b) Cylinder         c) Cube. 10
End Semester Examination, Dec. 2015  
BCA – Third Semester  
BUSINESS COMMUNICATIONS AND CONVERSATIONAL SKILLS-I  
(BCA-3005)  

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2  

Note: All questions are compulsory:

Q.1 Answer the following questions. (Any five):  
a) What is a syllable? What are the six types of syllables in english language?  
b) What are the uses of Phonetic Transcriptions?  
c) What are the plosive sounds in english language?  
d) What are the verbal phrases in english?  
e) What is diphthong? How many diphthongs are there in english language?  
f) What are the different types of prepositions in english?  

2x5

Q.2 Fill in the blanks with the most appropriate prepositions.  
a) This material is different ______ that.  
b) He has been absent ______ Monday.  
c) I haven’t been to the theater ______ a long time.  
d) This is a comfortable house to live ______.  
e) They are called ______ different names.  
1x5

Q.3 In groups, choose verbs and particles from the following boxes to make phrasal verbs:  

<table>
<thead>
<tr>
<th>Check</th>
<th>Count</th>
<th>Hold</th>
<th>Look</th>
<th>In</th>
<th>On</th>
<th>Over</th>
<th>Pay</th>
<th>Pick</th>
<th>Set</th>
<th>Turn</th>
<th>In</th>
<th>Out</th>
<th>Back</th>
<th>Off</th>
</tr>
</thead>
</table>

a) You should arrive at an airport two hours before an international flight to ______.  
b) “Can I ______ you to support me if the meeting gets nasty?” Craig asked his colleague.  
c) I asked Phil to ______ my computer. There is nothing obviously wrong with it, but it does seem slower recently.  
d) In an police lineup, a victim or witness will try and ______ the criminal.  
e) In many fairy tales, the protagonist will ______ for a very long journey at dawn, seeking fame and fortune.  
1x5

Q.4 Write a sentence using each homonym.  
Bear – bare;   dye – die;   assent – ascent;   herd – heard;   strait – straight  

1x5

Q.5 Write the correct verb in the blank to the left of each sentence.  
a) ______ everybody (was-were) asked to be quiet.  
b) ______ in a marathon, few of the starters (finishes-finish) the race.  
c) ______ sixty days (is-are) not enough time to complete the project.  
d) ______ all of the workers (is-are) receiving their bonus.  
e) ______ on our street (is-are) many tall trees.  
f) ______ it (don’t-doesn’t) make any difference.  
g) ______ the value of cars and motorcycles (has-have) increased.  
h) ______ the principal and her husband (is-are) honored guests.  
i) ______ either the pitcher or the base runners (was-were) caught piping.
j) ________ one of my friends (believe-believes) in E.S.P.  

Q.6 Complete these sentences with suitable interjections.
a) ________ we have won the match.
b) ________ where are you going now?
c) ________ what a beautiful colour?
d) ________ I hear someone coming.
e) ________ what a wicked lie?  

Q.7 Transcribe the following words according to IPA:
specify; variable; analyst; necessary; technique; campaign; purchase; product; suburb; contract  

Q.8 Replace the following phrases with those that conform to standard English usage:
a) ‘Passing out’
b) ‘Kindly revert’
c) ‘Doing the needful’
d) ‘Discuss about’
e) ‘Out of station’  

Q.9 Fill in the blanks using the appropriate superlative adjective.
a) Jones is always the ________ (early) to work.
b) Dogs are the ________ (friendly) animals on earth.
c) That is the ________ (pretty) ring I have ever seen.
d) The Black Mamba is the ________ (deadly) snake in the world.
e) It is the ________ (costly) in North Carolina.  

Q.10 Answer the following questions in 150 words:
a) Write a review of the last book you read.
b) Write a note on ‘your strengths’.  

Q.11 Write an article on the following topics in 150 words.
a) The rich always exploit the poor.
b) Without education man is just a beast.
Q.1 a) Differentiate primary and secondary memory.
b) Write syntax of ternary operator.
c) List 8-keywords in C language.
d) What is the address of first element in an array? 
e) ASCII stands for __________.
f) EBCDIC stands for __________.
g) What are major symbols used in flowchart?
h) List four storage classes.
i) One example of preprocessor directive is __________.
j) CD-ROM stands for ________.

UNIT-I
Q.2 a) What are various character codes used in computer? Discuss them in brief. 

Q.3 What are the functional units of a computer? Describe them in detail.

UNIT-II
Q.4 Write an algorithm to find sum of \( n \) even numbers. Also draw a flow chart for the same.

Q.5 What do you understand by memory? Describe memory hierarchy. What is the difference between primary memory and secondary memory?

UNIT-III
Q.6 a) Write a menu driven program to describe the switch statement.
b) What is the difference between token and keyword?

Q.7 What do you understand by a control statement? Discuss in brief the syntax of control statements used in C language.

UNIT-IV
Q.8 Write a program in C to count the number of characters in a string without using the strlen( ) function.

Q.9 What are user defined data types? Discuss one user defined data type in detail with an example.
End Semester Examination, Dec. 2015
BCA - First Semester
INTRODUCTION TO INFORMATION TECHNOLOGY AND PROGRAMMING TECHNIQUES
(BCA-101-CB)

Time: 3 hrs
Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  Multiple choice questions:
   a) A computer program that converts assembly language to machine language is:
      i) Compiler
      ii) Interpreter
      iii) Assembler
      iv) Comparator
   b) A byte consists of
      i) One bit
      ii) Four bit
      iii) Eight bit
      iv) Sixteen bit
   c) Which computer has been designed to be as compact as possible?
      i) Mini computer
      ii) Super computer
      iii) Micro computer
      iv) Mainframe computer
   d) Which of the following is not an input device?
      i) OCR
      ii) Optical scanners
      iii) Voice recognition system
      iv) COM
   e) Which of the following is used only for data entry and storage and never for processing?
      i) Mouse
      ii) Dumb terminal
      iii) Micro computer
      iv) Dedicated data entry system.

   State whether the following statements are True or False:
   f) A digitising tablet can be used for printing letters.
   g) Voice systems are output devices.
   h) WORM stands for write once read many.
   i) Optical mark reader is an input device that can be used for marking a multiple choice test.
   j) Hard copy is a term used to describe printed output.

   2x10

PART-A

Q.2  a) What is a computer? Why is it known as a data processor?
   b) What are the basic components of CPU of a computer system?
   c) Write the application of computer in sports field.
   d) Explain atleast five characteristics of computer.

   5x4

Q.3  a) Explain the difference between volatile and non-volatile memory. Give an example of each type of memory.
   b) Differentiate between PROM and EPROM.
   c) What is a cache memory? How is it different from a primary memory?

   7  5  8

Q.4  Write short notes on:
   a) System software.
   b) Application software.
   c) Utility software.
d) Type of printers.  

**PART-B**

Q.5  
a) What is structured program? What are its main advantages?  
8  
b) Why is proper documentation necessary for a program?  
7  
c) What is debugging? What are its characteristics?  
5  

Q.6  
a) Draw a flow chart to add up all the even numbers between 0 and 100. Before ending, print the result of the calculation.  
10  
b) Write an algorithm to print Fibonacci series upto a number n entered by the user.  
10  

Q.7  
a) What is a flow chart? List the flow charting rules.  
b) Explain in detail the various characteristics of a good program.  
c) What is modular approach? Explain.  
d) What are the different types of error? Explain.  
5x4
End Semester Examination, Dec. 2015
BCA -First Semester
ELEMENTS OF MATHEMATICS (BCA-102)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt **FIVE** questions in all; **taking at least ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1  
a) If a set A has n elements, then the total number of elements in power set of A is __________.
b) What do you mean by $|n|$?
c) What is meant by addition principle in set theory?
d) Find the 5th term of sequence 2, 4, 6, 8 __________.
e) Define gradient in vector calculus.
f) Define the following:
   i) A Ring
   ii) Derivative of functions.
   iii) Mutually exclusive events.
   iv) Cartesian product of sets.
   v) Domain of a function.  

Q.2  
a) In a class of 25 students, 12 students have taken economics; 8 have taken economics but not maths. Find:
   i) The number of students who have taken economics and maths.
   ii) Those who have taken maths but not economics.

b) If R is the relation “less than” from $A = \{1, 2, 3, 4, 5\}$ to $B = \{1, 4, 5\}$, write down the Cartesian product corresponding to R. Also find the inverse relation of R.

Q.3  
a) Find the domain and range of the following function:
   $y = \frac{x^2 - 1}{x - 1}, x \neq 1$

b) Find the sum of 17 terms of the A.P. 5, 9, 13, 17..............

UNIT-I

Q.4  
a) Evaluate: $\frac{\tan 66^\circ + \tan 69^\circ}{1 - \tan 66^\circ \tan 69^\circ}$

b) Prove that: $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ = \frac{1}{16}$

Q.5  
a) City residents were surveyed recently to determine readership of newspapers available. 50% of the residents read the morning paper, 60% read the evening paper and 20% read both newspapers. Find the probability that a resident selected reads either the morning or evening paper or both the papers.

b) Find the value of $\frac{2 \log 6 + 6 \log 2}{4 \log 2 + \log 27 - \log 9}$.

UNIT-III
Q.6  a) Evaluate: \( \lim_{x \to 3} \frac{x^2 - 4x + 3}{x^2 + 2x - 3} \)  

b) If \( y = x + \sqrt{x^2 - 1} \), prove that \( (y - x) \times \frac{dy}{dx} - y = 0 \)

Q.7  a) If \( f(n) = \begin{cases} \frac{x^2 - 1}{x - 1}, & \text{when } x \neq 1 \\ \frac{x^2}{2}, & \text{when } x = 1 \end{cases} \) show that \( f(n) \) is continuous at \( x = 1 \).

b) Find \( \frac{dy}{dx} \) when \( x^4 + y^4 + 4xy - 100 = 0 \).

**UNIT-IV**

Q.8  a) Evaluate: \( \int \frac{1}{\sin^2 x \cos^2 x} \, dx \)

b) Solve the differential equation: \( (x + 2) \times \frac{dy}{dx} = x^2 + 4x - 9 \)

Q.9  a) Solve the differential equation: \( \frac{x^2 \, dy}{dx} = x^2 - 2y^2 + xy \).

b) What is Algebraic structure? Explain groups and rings with example?
Q.1 a) Define rectangular matrix, identify matrix, null matrix and lower triangular matrix.  
b) Discuss the differences between the concept of permutations and combinations.  
c) Explain the Taylor’s theorem along with a suitable example.  
d) What are subtraction formulae in trigonometry?  
e) Explain differentiation of quotient of two functions.  

PART A  
Q.2 a) Find the value of $x$ such that \[
\begin{bmatrix}
1 & 2 & 0 \\
2 & 0 & 1 \\
1 & 0 & 2 \\
\end{bmatrix}
\begin{bmatrix}
1 \\
x \\
2 \\
\end{bmatrix}
= 0
\]  

b) Solve the following equations using Cramer’s rule:  
\[x + y + z = 7\]
\[x + 2y + 3z = 16\]
\[x + 3y + 4z = 22\]

Q.3 a) Simplify: \[
\left( \frac{5^{-1} \times 7^2}{5^2 \times 7^{-4}} \right)^{\frac{7}{2}} \times \left( \frac{5^{-2} \times 7^3}{5^3 \times 7^{-5}} \right)^{\frac{3}{2}}
\]  

b) Show that: \[\log 2 + 16 \log \frac{16}{15} + 12 \log \frac{25}{24} + 7 \log \frac{81}{80} = 1.\]

Q.4 a) Find the coefficient of $x^{-6}$ in the expansion of \[
\left( \frac{3x^2}{2} - \frac{1}{3x} \right)^9.
\]

b) How many words, with or without meaning, can be formed using all letters of the word EQUATION, using each letter exactly one.  
c) From a class of 30 students, 3 are to be chosen for a competition. In how many way can they be chosen?  

PART B  
Q.5 a) Prove that: \[
\sqrt{\frac{1 - \cos \theta}{1 + \cos \theta}} = \cos \theta - \cot \theta.
\]

b) Prove that: \[\sec^2 30^\circ + \cos ec^2 45^\circ + \cot^2 60^\circ + \sin^2 90^\circ = \frac{14}{3}.
\]

Q.6 a) Evaluate: \[\lim_{x \to 1} \frac{x^3 - 1}{x - 1}.
\]

b) Find the value of $k$, for which the following function is continuous at $x = 2$?
\[ f(x) = \begin{cases} 
\frac{x^2 - 4}{x - 2}, & x \neq 2 \\
\frac{k}{x}, & x = 2 
\end{cases} \]

c) Differentiate the following function w.r.t. \( x \): \[ \frac{2(x+1)}{x^2 + 2x - 3}. \]

Q.7  

a) Expand \((\tan(x))^5\) by Maclaurin’s theorem as far as \(x^5\) and hence find the value of \(\tan(0.81)\) upto four decimal places.

b) If \( f(x) = x^3 + 8x^2 + 15x - 24 \), Calculate the value of \( f\left(\frac{11}{10}\right) \) by the application of Taylor’s series.
End Semester Examination, Dec. 2015  
BCA -First Semester  
HARDWARE INTERFACES (BCA-103-CB)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Fill in the blanks:
   a) POST stands for ___________.  
   b) DVD stands for ___________.  
   c) SMPS stands for ___________.  
   d) BRD stands for ___________.  
   e) BIOS stand for _______________.  
   f) SCSI stands for _______________.  
   g) VIRUS stands for _______________.  
   h) USB stands for _______________.  
   i) UPS stands for _______________.  
   j) CMOS stands for _______________.  
   k) _______________ is used to protect the network from unauthorized access by outsiders.  
   l) The high speed memory placed between CPU and main memory is called _______________.  
   m) The first software installed on the personal computer is known as ___________.  
   n) _______________ memory is a logical memory.  
   o) CPU _______________ increases the performance of the CPU.  

Multiple choice questions:
   p) Which of the following is a volatile memory?  
      i) RAM  
      ii) ROM  
      iii) CDROM  
      iv) Hard Disk  
   q) Which of the following is an input device?  
      i) Printer  
      ii) Monitor  
      iii) Scanner  
      iv) Plotter  
   r) Power supply unit of a personal computer is called:  
      i) UPS  
      ii) SMPS  
      iii) Battery  
      iv) None of the above  
   s) Which of the following device is used for internet connection?  
      i) Switch  
      ii) Hub  
      iii) Modem  
      iv) None of the above  
   t) Group of 4 bits is known as:  
      i) Bit  
      ii) Byte  
      iii) Nibble  
      iv) Kilobyte

PART-A

Q.2 a) Describe the generations of Intel Pentium (I\textsuperscript{st} to IV\textsuperscript{th}) brand in detail.  
    b) What do you mean by CPU over clocking and why it is required?

Q.3 Describe the organization of hard disk. Describe its each part in detail.

Q.4 a) Explain the working of keyboard controller in detail.
b) Explain the working of super controller in detail. 10

**PART-B**

Q.5  
a) Explain the north bridge and south bridge used in a motherboard. 10  
b) Write all the steps of POST sequence in detail. 10

Q.6  
a) Draw the diagram for industry standard architecture (ISA) and define its components. 10  
b) Explain the working of plug-and-play devices. 10

Q.7  
a) What are threats faced by information systems in today’s world? 5  
b) What is a virus and how it may affect your personal computer? 5  
c) Write 10 steps to secure your personal computer from external threats. 10
End Semester Examination, Dec. 2015  
BCA -First Semester  
PC SOFTWARE (BCA-104)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit.  
Q.1 is compulsory. All questions carry equal marks.

Q.1  
a) A function inside another is called ________ .  
b) Background colour or effects applied on a document is not visible in ________ view.  
c) Portrait and landscape are ___________.  
d) What PowerPoint feature will you use to apply motion effect to different objects of a slide?  
e) What is the term used when we press and hold the left mouse key and move the mouse across the document?  
f) Dos is CUI. (TRUE / FALSE)  
g) A saved document is called a __________.  
h) The shortcut keys for the __________ character formatting are CTRL+SHIFT +sign.  
i) __________ Command is used to save an existing document under a new name.  
j) What is the best, way to ensure that important computer data is not lost? 1½x10

UNIT-I

Q.2  
a) Write the process of creating a folder in windows. How can you copy the files from an existing folder to the newly created folder? 7½  
b) What are screen savers? Write the steps to set up a screen saver for your computer. 7½

Q.3  
What is an operating system? Mention its types and explain them too. 15

UNIT-II

Q.4  
Write the features and uses of each of the following in MS-Word:  
a) Template wizards.  
b) Macros.  
c) Tab stops. 5x3

Q.5  
a) What do you mean by normal view and page layout view of a document? How do they differ from each other? 7  
b) What do you mean by “Mail Merge”? Pen down the steps to do so. 8

UNIT-III

Q.6  
a) When a formula is copied down a column the result is that each cell in the column contains a series of #### characters. What does this mean and how can you correct the problem? 8  
b) Discuss the concept of Freeze panes in MS-excel. 7

Q.7  
a) What is fill handle in a spread sheet and what is it used for? 6  
b) List different types of charts one can insert in excel worksheet. Explain the process of inserting a chart. 9

UNIT-IV

Q.8  
a) Discuss the various types of views available in MS-PowerPoint. 9
b) Write the benefits of PowerPoint presentation.

Q.9 Write the steps involved in creating a ‘presentation’ using PowerPoint to include the following tasks.
   a) To include a chart and slide on the same slide.
   b) Bulleted lists.
   c) Media clip and some text.
   d) Text over some objects.
   e) Change the speed of transition.
End Semester Examination, Dec. 2015
BCA -First Semester
FUNDAMENTALS OF C PROGRAMMING (BCA-104-CB)

Time: 3 hrs
Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Multiple choice questions:

a) What is the size of char datatype?
   i) 2  ii) 1  iii) 4  iv) 8

b) If two strings are identical, then strcmp() returns:
   i) -1  ii) 0  iii) 1  iv) Yes

c) How will you print \n on the screen?
   i) printf ("\n")  ii) printf ("\n")  iii) printf ("\\n")  iv) echo ("\\n")

d) Which of the following function is more appropriate for reading in a multiword string:
   i) printf ()  ii) scanf ()  iii) gets ()  iv) puts ()

e) How will you free the allocated memory?
   i) remove ()  ii) free ()  iii) delete ()  iv) puts ()

f) A union can’t be nested in a structure.
   i) True  ii) False

g) Which header file should be included to use function like malloc () and calloc ()
   i) memory.h  ii) stdlib.h  iii) string.h  iv) dos.h

h) Input-output function prototypes and macro are defined in which header file:
   i) conio.h  ii) stdlib.h  iii) stdio.h  iv) dos.h

i) Data written into a file using fwrite () can be read back using fscan ():
   i) True  ii) False

j) What is stderr?
   i) Standard error  ii) Standard error type
   iii) Standard error streams  iv) Standard error definitions 1½x10

Answer the following:

a) What is the difference between a constant and a variable?

b) Differentiate between break and continue 2½x2

PART-A

Q.2 a) Write a program to find reverse of a number and check whether it is palindrome or not.
   b) Explain the characteristics of C language.

Q.3 a) Explain the following functions with an example:
   i) getchar ()
   ii) scanf ()
   iii) strcmp ()
   iv) printf ()
   v) strcpy ()  4x5

Q.4 What do you mean by operators. What are various operators available in C language? 20
PART-B

Q.5 a) Write a menu driven program using function to find out:
   i) Factorial of a number.
   ii) Check even / odd number.
   iii) \( x^y \).

b) What is the advantage of using function? 15

Q.6 a) What do you mean by file organization. 8

b) Explain the following functions:
   i) fopen ()
   ii) fclose ()
   iii) fwrite ()
   iv) fscanf () 3x4

Q.7 a) Answer the following:
   i) What is recursion?
   ii) What is structure?
   iii) What is call by value? 5x3

b) What do you mean by storage classes? 5
Q.1 a) The exclusive NOR gate is equivalent to which gate followed by an inverter.
   i) OR  ii) AND  iii) NAND  iv) XOR

b) The small extremely fast RAM’s are called as:
   i) Cache  ii) Heaps  iii) Accumulators  iv) Starks

c) Logic gates with a set of input and output is arrangement of:
   i) Combinational circuit  ii) Logic circuit
   iii) Design circuit  iv) Register

d) Which of the following is not a weighted code?
   i) Decimal number system  ii) Excess-3 code
   iii) Binary number system  iv) None of the above

e) A flip flop circuit can be used for:
   i) Counting  ii) Scaling
   iii) Rectification  iv) Demodulation

f) What is the largest number of data inputs, which a data selector with control inputs can have?
   i) 2  ii) 4  iii) 8  iv) 16

g) In full address the sum circuit is implemented using:
   i) AND and OR gates  ii) NAND
   iii) XOR  iv) XNOR

h) The final addition sum of the number 0110 and 0110 is:
   i) 1101  ii) 1111  iii) 1001  iv) 1010

i) Floating point representation is used to represent:
   i) Boolean values  ii) Whole numbers
   iii) Real integers  iv) Integers

j) What characteristics of RAM memory makes it not suitable for permanent storage?
   i) Too slow  ii) Unreliable
   iii) It is volatile  iv) Too bulky

k) Write short notes on:
   i) Boolean theorems.
   ii) Memory classification.

PART-A

Q.2 What are Hamming codes? The data sent at sender side was 1011 and received as
1010. Find and correct the error. 20

Q.3 a) What are universal gates? Explain. 12
   b) Explain the weighted and non-weighted codes in detail. 8

Q.4 a) Simplify the following in POS forms:
   \[ F(A, B, C, D) = \overline{A} \oplus (1, 3, 5, 6, 9, 10, 12, 14) \]
   \[ f(w, x, y, z) = \Sigma \cap (0, 3, 5, 8, 12, 15) \] 10
   b) Find the other canonical form of
\[ f(w, x, y) = \sum (0, 2, 3, 5, 6) \]

**PART-B**

Q.5 What are multiplexers? Construct a 16 to 1 line multiplexer with two 8 to 1 line multiplexers and one 2 to 1 line multiplexers. Use block diagrams for the three multiplexers.

Q.6 a) What are flip flops? Explain master slave flip flop. 
   b) What are asynchronous counters? Explain it with the help of a next diagram.

Q.7 a) What do you understand by an associative memory? Explain.
   b) What is virtual memory? Explain address mapping using pages in detail.
Q.1 Fill in the blanks:
   a) The full form of LIFO is ____________.
   b) ______________ is a type of non-linear data structure.
   c) Traversing is used to ________________.
   d) ______________ contains a special pointer called null pointer.
   e) In a ______________ list, the lost node has a pointer to the first node.

Multiple choice questions:
   f) B trees are generally:
      i) Very deep and narrow  ii) Very wide and shallow
      iii) Very deep and very wide  iv) Cannot say
   g) A technique for direct search is:
      i) Binary search  ii) Linear search
      iii) Tree search  iv) Hashing
   h) If a node having two children is deleted from a binary tree, it is replaced by its:
      i) Inorder predecessor  ii) Inorder successor
      iii) Preorder predecessor  iv) None of the above
   i) The smallest element of an array’s index is called its:
      i) Lower bound  ii) Upper bound
      iii) Range  iv) Extraction
   j) In a circular linked list:
      i) Components are linked together in some sequential manner.
      ii) There is no beginning and no end.
      iii) Components are arranged hierarchically.
      iv) Forward and backward traversal within the list is permitted.

UNIT-I

Q.2 What do you mean by the complexity of an algorithm? Elaborate the method for calculating the space and three complexity with some relevant example.  

UNIT-II

Q.4 Write an algorithm to perform the following operations on a linked list:
   a) Adding a node.
   b) Searching a node.

Q.5 Write an algorithm to perform the following operations on a tree:
   a) Traversing a binary tree.
   b) Deleting a node in the tree.
**UNIT-III**

Q.6 Write an algorithm for a merge sort.  

Q.7 Write an algorithm for a binary search.  

**UNIT-IV**

Q.8 Write short notes on:
   a) Sequential method.
   b) Indexed sequential method.
   c) Direct method.  

Q.9 a) What is a file? What are the various file operations?  
   b) Write a short note on hashing.
End Semester Examination, Dec. 2015  
BCA -Second Semester  
MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE (BCA-202)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 3

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  

a) Let $P = \{1, 2, 3, 4\}$ and $R : P \rightarrow P$.  
   $R = \{(1, 1), (1, 2), (2, 1), (2, 2), (3, 2), (3, 3), (4, 3), (4, 4)\}$  
   Draw the directed graph of a relation.

b) Write the set $A = \{x : x^2 = 9\}$ in tabular form.

c) How many subset can be obtained from a set of $n$ elements?

d) Explain injective function with an example.

e) Let $P = \{x, y, z, \mu\}$ and $Q = \{a, b, c, d\}$ and $f : P \rightarrow Q$ such that $f = \{(x, a), (y, b), (z, c), (\mu, c)\}$. Find domain, codomain and range of the function.

f) The sum of degree of all vertices in a graph $G$ is even. (True/False)

g) Consider the directed graph:

```
  V1 -----> V2  
     |        |     
  V3 ----> V4 ----> V5
     |        |     
  V6    
```

   Determine adjacency matrix.

h) Construct the binary expression tree for the expression $(a + b)^{*}(d / c)$.

i) Define partially ordered set with an example.

j) Consider the Poset $A = \{a, b, c, d\}$ and let $B = \{c\}$. Determine upper bound and lower bound of $B$.

\[ \text{UNIT-I} \]

Q.2  

a) Among 100 students, 32 study mathematics, 20 study physics, 45 study biology, 15 study mathematics and biology, 7 study mathematics and physics, 10 study physics and biology and 30 do not study any of 3 subjects.
   i) Find the numbers of students studying all 3 subjects.
   ii) Find the numbers of students studying exactly one of the 3 subjects.  

b) Prove that $1+3+5+\ldots+2n-1=n^2$ by principle of mathematical induction.  

1½x10
Q.3  a) Let \( P = \{2, 3, 4, 5\} \). Consider the relation \( R \) and \( S \) on \( P \) defined by
\[
R = \{(2, 2), (2, 3), (2, 4), (2, 5), (3, 4), (3, 5), (4, 5), (5, 3)\}
\[
S = \{(2, 3), (2, 5), (3, 4), (3, 5), (4, 2), (4, 3), (4, 5), (5, 2), (5, 3)\}
\]
Find \( R \circ S \) and \( S \circ R \).

b) How many people must you have to guarantee that at least 9 of them will have birthdays in same day of the week?

c) Consider \( f, g, h \) all functions on the integers by \( f(n) = n^2, g(n) = n + 1 \) and \( h(n) = n - 1 \), find \( f \circ g \circ h \).

UNIT-II

Q.4  a) Write the Boolean expression that represent the following combinatorial circuit and also the write the truth table for the same.

b) Draw the diagram of a lattice which is the directly product of the following lattice.

UNIT-III

Q.5  a) Minimize the four variable logic function using k-map:
\[
f(A, B, C, D) = \sum (0, 1, 2, 3, 4, 5, 7, 8, 9, 11, 14)
\]

b) Consider the set \( D_{100} = \{1, 2, 4, 5, 10, 20, 25, 50, 100\} \) and the relation \( \leq \) be the partial order relation an divides.

i) Determine G.L.B of \( B \) where \( B = \{10, 20\} \).

ii) Determine L.U.B of \( B \) where \( B = \{10, 20\} \).

iii) Determine G.L.B of \( B \) where \( B = \{5, 10, 20, 25\} \).

iv) Determine L.U.B of \( B \) where \( B = \{5, 10, 20, 25\} \).

Q.6  a) Solve the difference equation \( 9a_r - 6a_{r-1} + a_{r-2} = 0 \) satisfying the condition \( a_0 = 0, a_1 = 2 \).

b) Find the equation of the line which passes through \((4, 5)\) and is paralleled to \(2x - 3y - 5 = 0\).

Q.7  a) Solve the difference equation \( 2a_r - 5a_{r-1} + 2a_{r-2} = 0 \) and find particular solution such that \( a_0 = 0 \) and \( a_1 = 1 \).

b) Without using Pythagoras theorem, show that \((4, 4), (3, 5)\) and \((-1, 1)\) are the vertices of a right angled triangle.
UNIT-IV

Q.8 Find the shortest path between \( K \) to \( L \) in the graph.

Q.9 a) Draw the binary tree when in-order and post-order traversal is given:

<table>
<thead>
<tr>
<th>In-order:</th>
<th>m</th>
<th>k</th>
<th>n</th>
<th>j</th>
<th>o</th>
<th>l</th>
<th>u</th>
<th>s</th>
<th>v</th>
<th>q</th>
<th>t</th>
<th>p</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-order:</td>
<td>m</td>
<td>n</td>
<td>k</td>
<td>o</td>
<td>u</td>
<td>v</td>
<td>s</td>
<td>t</td>
<td>q</td>
<td>r</td>
<td>p</td>
<td>l</td>
<td>J</td>
</tr>
</tbody>
</table>

b) Find all the spanning trees of graph \( G \) and find which is the minimal spanning tree of \( G \).
End Semester Examination, Dec. 2015
BCA - Second Semester
PROGRAMMING IN VISUAL BASIC (BCA-203)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q. 1 is compulsory. All questions carry equal marks.

Q.1 a) Visual Basic is a ___________ language.
b) ________ and _________ are data types available in VB.
c) ________ converts numerical value to string.
d) ____________ is an example of loop statement.
e) In ___________ control, list of items can be stored.
f) ____________ is a container control.
g) ____________ is the most important property of timer control.
h) VB project is saved with _____________ extension.
i) Data report has _____________ sections.
j) ____________ control is used for database connecting in VB. 1½x10

UNIT-I

Q.2 Explain the following terms briefly:
a) Event driven language.
b) Procedure.
c) Integrated development environment (IDE). 5x3

Q.3 Explain the difference between procedural language and event driven language. 15

UNIT-II

Q.4 Explain five string functions with appropriate examples. 15

Q.5 a) What are conditional statements? 5
b) What are local variables? How are they different from static variables? Give an example in support of your answer. 10

UNIT-III

Q.6 Explain the following controls in VB:
a) Combo box.
b) Text box.
c) Data grid control. 5x3

Q.7 What is control array? What is the need of control array? Explain with the help of an example. 15

UNIT-IV

Q.8 What is a menu? When should be the menus created on a form? Explain the things that have to be kept in mind while creating a menu. 15

Q.9 a) What is a database? 5
b) Explain all the steps required to connect a relational database to a VB form. 10
End Semester Examination, Dec. 2015
BCA -Second Semester
DIGITAL DESIGN AND COMPUTER ORGANISATION (BCA-204)

Time: 3 hrs  Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Multiple choice questions:
  a) Base 8 refers to which member system.
     i) Binary coded decimal.  ii) Decimal.
     iii) Octal.  iv) Hexadecimal.
  b) Convert the binary number 1011011 to hexadecimal.
     i) 5B.  ii) 5F.
     iii) 5A.  iv) 5C.
  c) How many truth table entries are required for three input circuit unit?
     i) 4.  ii) 8.
     iii) 12.  iv) 16.
  d) The basic logic gate whose output is the complement of input is the:
     i) OR gate.  ii) AND gate.
     iii) INVERTER gate.  iv) Comparator.
  e) The Hamming code is a method of:
     i) Error detection.  ii) Error correction.
     iii) Error encapsulation.  iv) Both i) and ii).
  f) Fastest small memory is:
     i) RAM.  ii) ROM.
     iii) Cache.  iv) Virtual.
  g) How many address lines are needed to address each memory locations in a 2048 x 4 memory chip?
     i) 10.  ii) 11.
     iii) 8.  iv) 12.
  h) Interrupts which are imitated by an I/O drive are:
     i) Internal.  ii) External.
     iii) Software.  iv) All of the above.
  i) ________ is the sequence of operations performed by CPU in processing an instruction.
     i) Execute cycle.  ii) Fetch cycle.
     iii) Derode.  iv) Instruction cycle.
  j) In immediate addressing the operand is placed.
     i) In the CPU register.  ii) After oprode in the instruction.
     iii) in memory.  iv) in stack.  1½x10

UNIT-I

Q.2 Perform the following:
  a) Convert.
     i) \((253.6)_{10} = ()_2 = ()_8 = ()_{16}\)
     ii) \((753.6)_{10} = ()_2 = ()_8 = ()_{16}\)
  b) \((F213.C3)_{16} - (IDEF.FD)_{16}\)

Q.3 a) What are hamming codes? Generate the hamming code for data bits 1101.  10
  b) Explain Gray code and ASCII code.  5
UNIT-II
Q.4 Explain all the basic gates with their truth table and symbols. 15

Q.5 Solve the following using K-Maps.
  a) \( F(A, B, C, D) = \sum (0, 1, 3, 5, 6, 8, 11, 13, 15) \)
  b) \( F(W, X, Y, Z) = \pi (1, 2, 3, 5, 8, 11, 15) \) 7½x2

UNIT-III
Q.6 Explain in detail how an instruction is executed with the help of an instruction cycle. 15

Q.7 What are addressing modes? Explain its different types with suitable examples. 15

UNIT-IV
Q.8 What are asynchronous data transfer? Explain handshaking based data transfer in detail. 15

Q.9 What are the various modes of transfer? Explain DMA transfer in detail. 15
Q.1 Choose the correct option.

a) BOD stands for.
   i) Biochemical oxygen demand.
   ii) Bio Oxygen demand.
   iii) Biotic demand.
   iv) Chemical oxygen demand.

b) If water pollution continues at its present rate, it will eventually:
   i) Stop water cycle.
   ii) Prevent precipitation.
   iii) Make nitrate molecules unavailable to water plants.
   iv) Make oxygen molecule unavailable to water plants.

c) Which of the following is a rich source of energy but never causes atmospheric pollution?
   i) Nuclear energy.
   ii) Solar energy.
   iii) Coal.
   iv) Wood.

d) DDT is a:
   i) Antibiotic.
   ii) Biodegradable pollutant.
   iii) Non Biodegradable pollutant.
   iv) None of these.

e) Biodiversity hotspot are characterized on the basis of:
   i) Endemic flowering plant and threat perception.
   ii) Endemic flowering plant.
   iii) Species of flowering plant.
   iv) None of the above.

f) What percent of area in the plain should be under forest?
   i) 21 %.
   ii) 25 %.
   iii) 17 %.
   iv) 33 %.

g) Relative contribution of CO₂, CH₄, CFCs and N₂O towards global warming are:
   i) 50 %, 30 %, and 10 %, resp.
   ii) 60 %, 20 %, 14 % and 6 % resp.
   iii) 40 %, 30 %, 20 % and 10 % resp.
   iv) None of the above.

h) Which of the following is responsible for the spread of dengue?
   i) Anopheles mosquito.
   ii) Cutex mosquito.
   iii) Aedes mosquito.
   iv) Housefly.

i) Which infective organism is responsible for Dengue.
   i) Bacteria.
   ii) Virus.
   iii) Fungus.
   iv) Protozoa.

j) Acid rain is caused by:
   i) CO & CO₂.
   ii) SO₂ and O₂.
   iii) SO₂ & NO₂.
   iv) NO₂ & O₂.

1x10
Q.2 Write short note on any four:
   a) Renewable resources.
   b) Need for public awareness about environment.
   c) Ecological pyramids.
   d) Food web.
   e) Energy flow in an ecosystem.  

Q.3 a) Explain the role of an individual in conservation of natural resources.  
   b) What do you mean by equitable use of resources for sustainable lifestyle?  

UNIT-II
Q.4 a) Explain energy flow in the ecosystem by giving suitable examples.  
   b) What do you mean by biodiversity in nature? How can we conserve it?  

Q.5 a) What are the different types of ecological pyramids? Explain significance of each.  
   b) Give an account of the structure and function of an ecosystem.  

UNIT-III
Q.6 Write short note on any four:
   a) Global warming.  
   b) Ozone layer depletion.  
   c) Nuclear accidents.  
   d) Acid rain.  
   e) Climate change.  

Q.7 a) What is the role and significance of Environmental Protection Law?  
   b) "Wasteland reclamation can bring a revolution". How?  

UNIT-IV
Q.8 a) What environmental factors effect the population growth of a place?  
   b) How family, women and child welfare programmes help in national growth?  

Q.9 a) Explain the role of information technology in environment and human health.  
   b) What is HIV/AIDS? How is it caused? Is it curable?
Q.1 Answer the following questions:
   a) What is noun and its types?
   b) What is syllable stress?
   c) What is pronoun and its types?
   d) Why syllable stress is importance?
   e) What are the types of article and name them also?
   f) What are the three rules of syllables stress?
   g) What is irregular verb and give three examples of it?
   h) What are three rules of subject verb and agreement?
   i) What are tag questions? Explain with two examples.
   j) What is open ended and close ended questions?

Q.2 Break into syllables and write the number of syllables.
   a) Communication. b) Biology
c) Geography. d) Cake
e) Pronunciation

Q.3 Fill in the blanks with appropriate prepositions:
   a) He died __________ hunger.
   b) I know him ___________ 2013.
   c) The movie starts __________ 09:30 am, so be _________ time.
   d) He was in Delhi __________ 4 years before he found a new job.
   e) I have been sick __________ Sunday.
   f) I will be ready ___________ 30 minutes.
   g) I was __________ work all day.
   h) The soccer player was ejected because he had done something that was __________ the rules.
   i) She is the kind of girl who knows everything __________ everyone.
   j) __________ our visit to Japan, we saw a lot of interesting places.

Q.4 State whether True or False:
   a) Syllable is counted based on the consonant sounds.
   b) Article ‘A’ is used before uncountable nouns.
   c) Photography is a three syllable word.
   d) Syllable stress helps in improving the grammar.
   e) “Might” is the modal of possibility.

Q.5 Fill in the blanks with appropriate articles.
   a) Denver is located at the foot of __________ Rocky Mountains.
      i) a  ii) the  iii) no article
   b) Toronto is located on __________ Lake Ontario.
      i) a  ii) the  iii) no article
   c) San Diego is located near __________ Mexican border.
d) Let's go to ______________ Mexico.

f) ___________ Sahara is the world’s biggest desert.

h) Do you speak __________ Chinese?

i) I need ___________ bottle of water.

j) Spain is one of _______________ largest European countries.

Q.6 Write the correct form of the verb.

a) Either the teacher or the students ________ (Know/Knows) the truth.

b) Rahul and his friend ________ (is/are) in the market.

c) Sharukh Khan along with his children ________ (has/have) gone for the party.

d) Bread and Butter ________ (is/are) in the breakfast.

e) Angelina or her brother ________ (don’t/doesn’t) know it.

Q.7 Answer any one of the following question in 150 words:

a) “Communication is not about what you say rather how you say”. Justify the statement.

b) Are humans to blame for certain animal extinctions?
**End Semester Examination, Dec. 2015**  
**BCA - Third Semester**  
**MATHEMATICS-II (BCA-301)**

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt **FIVE** questions in all; taking at least **ONE** question from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

**Q.1**

a) Without expanding prove that determinant vanish.

\[
\begin{vmatrix}
3 & 1 & 6 \\
5 & 2 & 10 \\
7 & 4 & 14 \\
\end{vmatrix}
\]

b) Find AB if

\[
A = \begin{bmatrix}
1 & 3 \\
2 & 1 \\
\end{bmatrix}
\quad \text{and} \quad
B = \begin{bmatrix}
4 \\
-1 \\
\end{bmatrix}
\]

c) Define singular and non singular matrix with an example.

d) Find the value of \(12 P_4\).

e) Define monotonic increasing function with an example.

f) Is \(N \times N\) is countable. (**True/False**)

g) Define least upper bound and greatest lower bound with an example.

h) Find L.U.B and G.L.B of \(\{1 - \frac{1}{n} : n \in N\}\).

i) Semi closed interval \([a, b]\) and \((a, b]\) are neither closed nor open. (**True/False**)

j) Give an example of open set which is not an interval. **1\(\frac{1}{2}\)x10**

**UNIT-I**

**Q.2**

a) If \(A = \begin{bmatrix}
0 & 3 \\
-7 & 5 \\
\end{bmatrix}\) and \(I = \begin{bmatrix}
1 & 0 \\
0 & 1 \\
\end{bmatrix}\), then find \(K\) so that \(KA^2 = 5A - 21I\). **6**

b) Find the inverse of the matrix:

\[
A = \begin{bmatrix}
1 & 1 & 3 \\
1 & 3 & -3 \\
-2 & -4 & -4 \\
\end{bmatrix}
\]  

**9**

**Q.3**

a) Find the two middle terms in the expansion of \(\left(2x - \frac{x^2}{9}\right)^9\). **7**

b) How many different words can be formed out of the letters of the word MALENKOV so that:

i) No two vowels are together.

ii) Relative position of vowel and five consonant remain unchanged. **8**

**UNIT-II**

**Q.4**

a) Prove that set of all real numbers in the interval \([0, 1]\) is uncountable. **10**

b) Prove that arbitrary family of closed sets is closed. **5**

**Q.5**

a) State and prove BOLZANO-WEIERSTRASS theorem. **10**
b) Show that if B is countable subset of an uncountable set A then A-B is uncountable.

UNIT-III

Q.6 State and prove D’-Alembert’s ratio test of series.

Q.7 a) Use Cauchy’s general principle of convergence to show that the seq. \( \left\{ \frac{n}{n+1} \right\} \) is convergent.
b) In \( \langle u_n \rangle \) is a sequence of positive terms converging to \( u > 0 \) and \( v_n = (u_1 u_2 \ldots u_n)^{1/n} \) then \( \langle v_n \rangle \) converges to \( u \).

UNIT-IV

Q.8 a) If \( \lim_{x \to 0} \frac{\sin 2x + a \sin x}{x^3} \) is finite, find the value of \( a \) and the limit.
b) Show that \( \frac{x}{1+x} < \log (1+x) < x, \ x > 0 \).

Q.9 a) Expand \( \sin x \) and \( \cos x \) in power of \( x \).
b) Evaluate \( \lim_{x \to 0} \frac{1+\sin x - \cos x + \log (1-x)}{x \tan^2 x} \).
End Semester Examination, Dec. 2015
BCA - Third Semester
OBJECT ORIENTED DESIGN AND PROGRAMMING (BCA-302)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) _______ and _________ are examples of object oriented language.
b) _______ and _________ are string functions available in C++.
c) Give two examples of conditional statements available in C++.
d) Static member function of a class should have ________.
e) A base class is made virtual when ________.
f) A base class is made virtual when ________.
g) A pointer to a base class can contain ________.
h) Destructor is executed when ________.
i) ________ is an example of polymorphism.
j) ________ operator cannot be overloaded.

UNIT-I

Q.2 Write short notes on the following:
a) Encapsulation.
b) Inheritance.
c) Polymorphism.

Q.3 What is object oriented programming language? What is its need? Explain the structure of a C++ program.

UNIT-II

Q.4 Write short notes on the following:
a) Static member function.
b) Class.
c) Passing parameters to a function.

Q.5 When do we make the member data of a class as static? Explain with the help of an example.

UNIT-III

Q.6 What is a destructor? Explain its execution with the help of an example. Also explain the order of execution of destructors in inheritance.

Q.7 Write short notes on the following:
a) Virtual function.
b) Abstract class.
c) Operator overloading.

UNIT-IV

Q.8 Explain the concept of function overriding with the help of an example.

Q.9 a) What is the difference between compile time and run time error?
b) Explain the use of catch and try block with the help of an example.
Q.1 Multiple choice questions:
   a) A query is used to:
      i) Extract information from database.
      ii) Create entities
      iii) Create storage space
      iv) None of the above.
   b) A view involves those portions of database that are:
      i) Concerned to the user 
      ii) Not concerned to the user
      iii) That contains unique values
      iv) Contains null values.
   c) DCL is a language that allows:
      i) Granting of privileges
      ii) Retrieval of data
      iii) Alter schema objects
      iv) Rename schema.
   d) Which structure is the network model based on?
      i) Graph
      ii) Linked list
      iii) Tree
      iv) None of the above.
   e) The number of entity types that participate in a relationships is called the;
      i) number
      ii) identifying characteristics
      iii) Degree
      iv) Counter
   f) The main types of entities are:
      i) Strong entities
      ii) Weak entities
      iii) Associative entities
      iv) All of the above
   g) Oracle data types include:
      i) Varchars
      ii) BLOB
      iii) Long
      iv) All of the above
   h) RTRIM function returns the:
      i) Character for the decimal equivalent
      ii) Strips trailing character
      iii) Converts string to lowercase
      iv) Converts string to uppercase
   i) BCNF refers to:
      i) Atomicity
      ii) Primary key
      iii) Overlapping candidate key
      iv) None of the above.
   j) The different recovery techniques are:
      i) Log based recovery
      ii) Database modification
      iii) Shadow paging
      iv) Both i) and ii)

UNIT-I

Q.2 a) What are the different types of database end user? Discuss the main activities of each. 8
   b) Explain the advantages and disadvantages of DBMS. 7

Q.3 What is meant by ER diagram? How can it be used for modeling? Discuss the various types of attributes and cardinality ratio with a suitable examples. 15
UNIT-II

Q.4  a) Discuss the concept of domain? How can attribute define a domain? Explain with an example.  
     b) Define and illustrate the term null or unknown value.  

Q.5  Explain the following terms: 
     a) Entity 
     b) Tuple 
     c) Degree 
     d) Key attributes 
     e) Participation constraint.  

UNIT-III

Q.6  Explain the following: 
     a) Multivalued dependency 
     b) Transitive dependency 
     c) Fully functional dependency  

Q.7  a) Discuss the similarities and dissimilarities between BCNF and 3rd NF.  
     b) How do we convert a database in first normal form to second normal form? Explain with an example.  

UNIT-IV

Q.8  What are the problems occurred through two-phase locking protocol? Discuss and give possible solutions of these problems.  

Q.9  What is security in database environment? What is the importance of it and also discuss data tampering.
End Semester Examination, Dec. 2015  
BCA -Third Semester  
BUSINESS ORGANISATION AND PRINCIPLES OF MANAGEMENT (BCA-304)  

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1  
Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Choose the correct option:  
a) The problem solving process begins with:  
   i) Clarification of the situation  
   ii) Isolation of the cause  
   iii) Establishment of alternatives  
   iv) Identification of difficulty  
b) Edward Thomas is related to.  
   i) Behaviourist framework  
   ii) Cognitive approach  
   iii) Social cognitive framework  
   iv) None of the above  
c) Define one characteristics of modern organization.  
d) ____________ is known as “father of scientific management”.  
e) LPG stands for liberalization ____________ and globalization.  
f) KPO stands for ______________.  
g) Management is the combination of art, science and profession. (True/False)  
h) ____________ contains data about each employees skills abilities work.  
i) Name the physical aspect of an enterprise.  
j) Decision making is a primary part of management process. (True/False)  

UNIT-I  

Q.2 What is globalization? Discuss the recent trends in business world.  
Q.3 What is business UNIT? Explain various factors affecting the size of the firm.  

UNIT-II  

Q.4 Define organisation and its types.  
Q.5 What are different behavioural models of decision making in an organisation? Explain in detail.  

UNIT-III  

Q.6 Explain the concept of management and its importance in present-day context.  
Q.7 Explain various management functions in logical order.  

UNIT-IV  

Q.8 What is the need of training and development in an organisation? How will you differentiate between them?
Q.9  Why human resource management is essential for an organisation? How is it different from human resource development? Explain.
End Semester Examination, Dec. 2015  
BCA – Third Semester  
BUSINESS COMMUNICATIONS AND CONVERSATIONAL SKILLS-I  
(BCA-306)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt all questions are compulsory:

Q.1 Answer the following questions:
   a) What are the rules of word stress?
   b) What are conjunctions?
   c) What is slang language? Give an example.
   d) Name three degree of comparison of adjectives.
   e) What is colloquialism?  

2x5

Q.2 Fill in the blanks with the most appropriate conjunctions:
   a) These rooms are very comfortable ________ they have a good view of the city.
      i) Also  ii) And  iii) Still  iv) As
   b) ________ the teacher explained the lesson several times, some of the students still
did not understand it.
      i) Although  ii) Even if  iii) Unless  iv) Since
   c) He did not join us for the movie ________ he had already seen it.
      i) And  ii) But  iii) Although  iv) Because
   d) She could not find the book she wanted ________ she borrowed a magazine instead.
      i) So  ii) And  iii) But  iv) So that
   e) I tried to make her realize the consequences ________ she refused to listen.
      i) Lest  ii) Since  iii) But  iv) Also
   f) He will show us around himself ________ send someone else.
      i) And  ii) If  iii) Or  iv) So
   g) ________ he was not interested in music, he agreed to go to the concert.
      i) Though  ii) While  iii) For  iv) Since
   h) Those village folk are poor ________ they always seem so contented.
      i) Though  ii) Since  iii) Yet  iv) Or
   i) The river has overflowed his banks ________ it has been raining continuously for several days.
      i) Still  ii) Yet  iii) When  iv) As
   j) I don’t think he will remember the appointment ________ you remind him.
      i) So  ii) If  iii) Unless  iv) Lest
   k) You treated him badly ________ he is doing the same to you now.
      i) So  ii) If  iii) But  iv) Although
   l) He is sick ________ he wants to go out.
      i) When  ii) Yet  iii) That  iv) Because
   m) ________ there is no more butter you must use the margarine.
      i) So  ii) Either  iii) Since  iv) But
   n) Gerard, ________ Pete, is joining us on the trip.
      i) As well as  ii) Nor  iii) Whereas  iv) If
   o) She was afraid ________ the building would collapse.
      i) And  ii) While  iii) Even though  iv) That  

1x15

Q.3 Choose the correct form of the verb that agrees with the subject.
a) Eight dollars (is, are) the price of a movie these days.
b) (Is, Are) the tweezers in this drawer?
c) Your pants (is, are) at the cleaner's
d) There (was, were) fifteen candies in that bag. Now there (is, are) only one left!
e) The committee (debates, debate) these questions carefully.
f) The committee (leads, lead) very different lives in private.
g) The Prime Minister, together with his wife, (greets, greet) the press cordially.
h) All of the CDs, even the scratched one, (is, are) in this case.
i) Annie and her brothers (is, are) at school.
j) Either my mother or my father (is, are) coming to the meeting.
k) The dog or the cats (is, are) outside.
l) Either my shoes or your coat (is, are) always on the floor.
m) George and Tamara (doesn’t, don’t) want to see that movie.
n) Benito (doesn’t, don’t) know the answer.
o) One of my sister (is, are) going on a trip to France.

Q.4 Present Perfect Tense: Change the verb into the correct form:

a) I (read) your book several times.
b) She (wear) that skirt many times.
c) My family (visit) Brazil a few times.
d) I (eat) already.
e) Marta (Finish) her homework.
f) You (break) the glass again.
g) They (pay) for everything.
h) It (never snow) like that.
i) I (meet) Anna once.
j) We (see) him before.
k) You (buy) 4 cars so far.
l) There (be) problems.
m) I (have) a snake.
n) Maria (raise) a monkey.
o) The kids (grow) so much!

Q.5 Identify the Indianism in the following statements and write the correct statement:

a) I went to the stadium for playing football.
b) He talks English very well.
c) My birth date is 29th August.
d) I came here for the purpose to learn English.
e) Are you still try to learning Hindi.
f) What is your good name?
g) I’m having two sisters.
h) I will revert it back to you.
i) Today itself, I will get back to you.
j) I went to the stadium for playing football.

Q.6 Write short notes on any two:

a) My objective in life.
b) Role of ethics in life.
c) Job vs Business.
End Semester Examination, Dec. 2015  
BCA -Fourth Semester  
E-COMMERCE (BCA-401)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  
a) What does EDI stands for?  
b) Give atleast three examples of the websites which provides e-cash facility.  
c) Name any two commercial internet payment systems.  
d) What does B2B stands for?  
e) Name three models for B2B EC.  
f) What is POS?  
g) What does SET stands for?  
h) Domain name is the name by which __________ is identified.  
i) Name two threats to network security.  
j) Name any three internet protocols.  

UNIT-I

Q.2  
Define ‘Electronic Commerce’. What are the key differences between traditional commerce and electronic commerce?  

Q.3  
Explain the following:  
a) Porter’s value chain model.  
b) Business strategy.  

UNIT-II

Q.4  
What is B2B e-commerce? Which business units should be involved in a B2B project?  

Q.5  
Write short notes on:  
a) Supplier-oriented market place.  
b) EDI  

UNIT-III

Q.6  
What is e-money? Explain the key characteristics of e-money.  

Q.7  
Explain the following:  
a) Smart card.  
b) Cyber cash and e-cash.  

UNIT-IV

Q.8  
Briefly describe the essential infrastructure for the set up of electronic commerce.  

Q.9  
Write short notes on:  
a) The future of electronic commerce.  
b) Digital economy.  

1½x10
End Semester Examination, Dec. 2015
BCA - Fourth Semester
OPERATING SYSTEM (BCA-402)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Fill in the blank with appropriate word:

a) A computer cannot boost if it does not have ________.
b) ________ provides an interface between a process and the operating system.
c) The number of processes completed per unit time is called ________.
d) Virtual memory is implemented by ________.
e) ________ is used to organize files.

State whether True or False:
f) The first sector of any hard drive contains a partition tables.
g) Logical and physical addresses are same.
h) SJF is an example of a priority-based scheduling algorithm.
i) If each resource type has single instance, then a cycle does not necessarily imply that a deadlock has occurred.
j) Bootstrap loader loads operating system into memory.

UNIT-I

Q.2 a) List four functions of any operating system and describe them. 10
b) What is multiprocessing? 5

Q.3 List five services provided by an operating system. Explain how each provides convenience to the users. Explain in cases it would not be possible for user-level programs to provide these services. 15

UNIT-II

Q.4 a) Explain different states of a process with the help of state transition diagram. 8
b) What is PCB? Give its structure and function. 7

Q.5 Describe Round-Robin scheduling with the help of an example. 15

UNIT-III

Q.6 Discuss the following page replacement algorithms with the help of an example.
a) FIFO page replacement.
b) Optimal page replacement.
c) LRU page replacement. 5x3

Q.7 Discuss:
a) Paging. 15
b) Swapping.

UNIT-IV

Q.8 Define file system with two examples. List any four operations on files with suitable examples. 15

Q.9 a) Explain the difference between block oriented and character oriented devices. Give examples. 6
b) List and explain functions of I/O devices. 9
End Semester Examination, Dec. 2015
BCA -Fourth Semester
WEB DESIGNING AND INTERNET APPLICATIONS (BCA-403)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit.  
Q.1 is compulsory. All questions carry equal marks.

Q.1  
a) HTML uses:  
i) Pre-specified tags  ii) User-defined tags  
iii) Tags only for linking  iv) Fixed tags defined by language  
b) Which language defined the behavior of webpage:  
i) HTML  ii) JavaScript  
iii) CSS  iv) French  
c) JavaScript is ________ side scripting language.  
i) Sever  ii) Browser  
iii) ISP  iv) None of these  
d) Which CSS property is used to change the text color of an element?  
i) font-color  ii) fgcolor  
iii) text-color  iv) color  
e) Each computer connected to internet must:  
i) be an IBM PC  ii) have a unique IP address  
iii) be internet compatible  iv) Have a modern connection  
f) Which tag is used for arranging tags in paragraph?  
i) <par>  ii) <paragraph>  iii) <p>  iv) <a>  
g) The tag used in HTML to link with other URL is:  
i) <A>  ii) <H>  iii) <U>  iv) <L>  
h) Which of the following HTML code is valid?  
i) <font colour="red">  ii) <font color="red">  
ii) <red> <font>  iv) All of the above  
j) Which element is used to name an element uniquely?  
i) Class  ii) id  
iii) dot  iv) All of the above  

UNIT-I

Q.2 Write a short note on:  
a) E-mail  b) Search engine  c) Gopher

Q.3  
a) What are the factors keep in mind while designing website for the client?  
b) Internet addressing.  
c) Internet Security.

UNIT-II

Q.4 Incorporate the following single document:  
BOLD, ITALIC, SMALL, SUPERSCRIPT, SUBSCRIPT, UNDERLINE, COMMENT, DEFINE,  
BLOCKQUOTE, CENTER

Q.5  
a) What is the purpose of list explain different types of list with example?
b) Explain the image tag with its attributes.  

**UNIT-III**

Q.6 a) Differentiate HTML and DHTML. 
   b) Design registration form that shows personal details, area of interest, year of passing and marks of various subjects.  
   
Q.7 a) Create table using various attribute: 

<table>
<thead>
<tr>
<th>RAILWAY RESERVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train no.</td>
</tr>
<tr>
<td>Reaching</td>
</tr>
<tr>
<td>Put atleast 5 records</td>
</tr>
</tbody>
</table>

b) Explain the use of frames in HTML.  

**UNIT-IV**

Q.8 a) What is document object model? Explain with diagram.  
   b) Write a program in JavaScript for addition of two numbers.  
   
Q.9 a) Differentiate between internal, external and inline stylesheets.  
   b) Write a program in JavaScript to display day using switch statement.  
   
Q.1 Choose the correct option:

a) The word communication is derived from communis (Latin) which means:
   i) Common  ii) Message  iii) Community  iv) Oral speech
b) Filters that affect the content of a message are in:
   i) The mind of the listener
   ii) The minds of both the speaker and the listener
   iii) The mind of the speaker
   iv) The medium of communication.

c) As a process of sharing thoughts and ideas, communication suffers mainly from:
   i) Physical barriers  ii) Non-physical barriers
   iii) Both physical and non-physical barriers  iv) Gender differences
d) Human communication is essentially:
   i) Imperfect  ii) Perfect  iii) Emotional  iv) Short-lived
e) Arriving ahead of time for a meeting is an example of:
   i) Feedback  ii) Body language
   iii) Non-verbal communication  iv) Verbal communication
f) An intranet differs from an extranet in the following way:
   i) Intranet is a private website
   ii) Intranet is meant only for internal stakeholders
   iii) Intranet is more suitable for large organizations
   iv) Intranet is more suitable for large organization
g) A GD (Group Discussion) is highly structured because:
   i) It is coordinated by a moderator
   ii) It measures group communication skills
   iii) Members have to listen to the views of others
   iv) The topic, time and number of participants are all decided in advance
h) A presentation is a form of oral communication in which a person shares factual information with an audience that is:
   i) Specific  ii) Mixed  iii) Large  iv) Small
i) To make a presentation effective and impressive, you should use:
   i) Complex sentence  ii) Jargon
   iii) Passive sentences  iv) Simple and active form of sentences
j) To be able to give a good presentation, a full rehearsal is:
   i) Optional  ii) Useless
   iii) Audience based  iv) Necessary  $1\frac{1}{2}$x10

UNIT-I

Q.2 a) Define emotional intelligence. Mention five areas of emotional intelligence which help an individual to grow.  8  
b) Explain in detail the different stages of team formation.  7

Q.3 a) Why is communication skill so important in all aspects of life? Mention how good communication skills helps.  8
b) List out various ways to improve your communication skills and make it more effective.

UNIT-II

Q.4 a) What is meant by an attitude? How attitude works for an individual?  
   b) Job satisfaction is related with five specific job dimensions. Explain

Q.5 Solve the followings:
   a) Connie loaned Sam Rs. 2,000 at a yearly interest rate of 5%. After one year how much money will be received by Connie?
   b) Half percent, written as decimal is ________.
   c) The population of a town increases every year by 4%. If its present population is 50,000 then after 2 years it will be ________.
   d) The cost of an article is 75 Rs. The cost was increased by 20% and later on it was reduced by 20%. What is the present cost of the article?
   e) Each side of a rectangular field is diminished by 40%. By how much percent is the area of the field diminished?

UNIT-III

Q.6 What are the various steps involved in making a professional and effective presentation?

Q.7 Write short notes on:
   a) Brainstorming.
   b) Logical sequence pole in a presentation.
   c) Presentation formats.

UNIT-IV

Q.8 a) Why conducting interviews is so crucial for an organization?
   b) What are the different steps involved and types of interview conduction process?

Q.9 a) Performance appraisal interview should be handled with full preparation and ground work. Elaborate.
   b) Mention various documents that need to be carried while going for an interview. Also give formats wherever, required.
Q.1 What are adverbs? Please explain with at least two suitable examples the difference between adjectives and adverb?  

Q.2 Please rewrite the sentence correctly thereby placing the adverb in their proper positions:
   a) I almost walked ten miles yesterday.
   b) He barely answered a few questions.
   c) She only invited her friends.
   d) I only praise him when he deserves it.
   e) They only worked two sums.

Q.3 Please form adverbs using the following adjectives:
   a) Clever
   b) Wise
   c) Kind
   d) Foolish
   e) Quick
   f) Beautiful
   g) Single
   h) Double
   i) Ready
   j) Heavy

Q.4 Define active voice and passive voice. Give at least two suitable examples of each.

Q.5 Please interchange the following sentences from active to passive:
   a) Bruths stabbed Caesar.
   b) The people wile make him president.
   c) Who taught you grammar?
   d) The Governor gave him a reward.
   e) I know her.

Q.6 Please interchange the following sentences from passive to active:
   a) She is known to me.
   b) A football was kicked by me.
   c) Promises should be kept.
   d) An apple by eaten by her.
   e) My pocket has been picked.

Q.7 Fill in the blanks with the correct form of tenses:
   a) The headmaster ________ to speak to you. (Wants, is wanting, was wanting)
   b) I ________ a new bicycle last week. (bought, had bought, have bought)
   c) Here are your shoes; I ________ them. (Cleaned, Just cleaned, have just cleaned)
   d) It ________ since early morning. (rained, is raining, has been raining)
   e) I ________ a lot of work today. (did, have done, had done)
   f) I ________ something burning. (smell, smelled, an smelling)
   g) She ________ unconscious since four O’clock. (is, was, has been)
   h) We ________ for his call since 4.20. (are waiting were waiting, have been waiting)
i) The earth ______ round the sun. (moves, is moving, move)  
j) Time and tide ______ for none. (wait, waits)  

Q.8 What is a phrase? Please give two examples to explain the difference between a preposition and a prepositional phrase?  

Q.9 Use the following prepositional phrases in sentences. The phrase must fit in contextually: 
a) Alones with  
b) With an eye to  
c) In place of  
d) Because of  
e) In favour of  

Q.10 What are direct and indirect speech? Please give two suitable examples of each.
END SEMESTER EXAMINATION, DEC. 2015
BCA -FIFTH SEMESTER
INFORMATION AND COMMUNICATION TECHNOLOGY (BCA-501)

TIME: 3 HRS
MAX MARKS: 75
NO. OF PAGES: 1

NOTE: ATTEMPT FIVE QUESTIONS IN ALL; TAKING AT LEAST ONE QUESTION FROM EACH UNIT. Q.1 IS COMPULSORY. ALL QUESTIONS CARRY EQUAL MARKS.

Q.1

Answer the following:

a) Differentiate between WiFi and Bluetooth.
b) What is intrusion?
c) Define WWW.
d) What is phishing?
e) Define EFTPOS.

2x5

Fill in the blanks:

f) FTP is ____________.
g) The digital divide is ____________.
h) RSI is used in ____________ application of ICT.
i) Tuck shops are used for ____________.
j) XML stands for ____________.

1x5

UNIT-I

Q.2

a) Define the terms information, communication and technology with their relationship.

b) Explain the role of ICT and its Boon or bane.

7

8

UNIT-II

Q.3

a) Explain the process of maintaining address book on the internet.

b) What is digital signature? What are its advantages and disadvantages?

5

10

UNIT-III

Q.4

a) What is the concept behind internet technology? Also explain its uses in today’s world.

b) Differentiate between intranet and extranet with suitable examples.

8

7

Q.5

What are computer viruses? What are the impacts of viruses on computer? Define types of viruses. How virus is different from a malware?

15

UNIT-IV

Q.6

Write short notes on the following with examples:

a) Pilagrism.
b) Copyrighting.
c) Software privacy.
d) Cyber crime.

15

Q.7

Write the ethical issues related to the use of internet. What is the Data Protection Act? How it helps to stop hacking?

15

Q.8

Relate applications of ICT to the following in real world systems:

a) Retail industry.
b) Banking.
c) Booking system.
d) Health system.

15
Q9 Explain the concepts behind turtle graphics, buzzers, motors, burglar alarms, microwaves in detail.
End Semester Examination, Dec. 2015
BCA – Fifth Semester
SOFTWARE ENGINEERING (BCA-502)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

**Q.1 Multiple choice questions:**

a) Variance from product specification is called:
   i) Report  
   ii) Requirement  
   iii) Defect  
   iv) Summary

b) Verifications is:
   i) Process based  
   ii) Product based.

c) White box testing is not called as:
   i) Glass box  
   ii) Closed box  
   iii) Open box  
   iv) Clear box.

d) Beta testing is done by:
   i) Customer  
   ii) Developer  
   iii) Tester  
   iv) None of above.

e) Boundary value analysis belongs to:
   i) Black box  
   ii) White box.

**Fill in the blanks:**

f) Unit testing will be done by __________.

g) Testing’s first goal is __________.

h) ________ is the discrepancy between computed and observed value.

i) Test should be conducted for every possible ________.

j) Debugging refers to undertaking measures to make programs free from ________.

1½x10

**UNIT-I**

Q.2  
a) What are various software engineering principles?  
b) Differentiate between software product and software process.

10  
5

Q.3  
Explain prototype model in detail. What are various advantages and disadvantages of this model?

15

**UNIT-II**

Q.4  
Explain the following with the help of an example:
   a) Gantt chart.  
   b) Pert  
   c) CPM.

5x3

Q.5  
a) What do you mean by software metrics? Explain the purpose of software metrics in brief.

5

b) Explain Halstead software science metrics in detail.

10

**UNIT-III**
Q.6 Differentiate between the following:
   a) Coupling and cohesion.
   b) Junction oriented and object oriented design.
   c) DFD and flowchart.

Q.7 Explain COCOMO model in detail.

UNIT-IV

Q.8 What do you mean by a software testing life cycle? Explain various phases of software testing life cycle.

Q.9 a) What is the structure of testing team?
   b) Explain boundary value analysis with the help of an example.
Q.1  a) Interactive computer graphics uses various kind of input devices such as:
   i) Mouse
   ii) Graphic tablet
   iii) Joystick
   iv) All of the above

b) The area of computer that is captured by an application is called:
   i) Window
   ii) View port
   iii) Display
   iv) None of the above

c) The function of plotter in like a:
   i) Monitor
   ii) Projector
   iii) Printer
   iv) None of the above

d) The flat panel display is called as an:
   i) LCD monitor
   ii) LED monitor
   iii) Both i) and ii)
   iv) None of the above

e) The image is passed repeatedly to the monitor ________ in order to maintain a
   steady picture on the screen.
   i) 25 times a second
   ii) 30 times a second
   iii) More than 30 times a second
   iv) None of the above

f) Transformation can be divided as:
   i) Co-ordinate
   ii) Geometric
   iii) Both i) and ii)
   iv) None of the above

g) In line function ________ parameter are passed.
   i) 4
   ii) 3
   iii) 2
   iv) 8

h) initgraph() is used to:
   i) Initialize the graphics.
   ii) To change the mode to character interface.
   iii) Close the graphics.
   iv) None of the above.

i) Projection can be categorized as:
   i) Perspective projection
   ii) Parallel projection
   iii) Both i) and ii)
   iv) None of the above

j) The smaller version of an image is called as:
   i) Clipart
   ii) Popup
   iii) Thumbnail
   iv) Portable network graphics

UNIT-I

Q.2  Differentiate between following (any three):
   a) Roster scan and random scan.
   b) CUI and GUI.
   c) LCD and LED.
   d) Shadow mask and beam penetration.
e) GKS and PHIGS.

Q.3  a) Discuss the working of touch panel in details.  
     b) Explain the working of CRT in details.

UNIT-II

Q.4  Explain the steps to draw a line between points \( A(x_1, y_1) \) and \( B(x_2, y_2) \) using Bresenhem’s line drawing algorithm. Also highlight the points that would occur if a line is drawn between points \( P(0,0) \) and \( Q(9,6) \).

Q.5  Find the new transformed triangle \( A(1,1) \), \( B(9,3) \) and \( C(6,8) \) if
     a) It’s rotated by an angle of \( 90^\circ \) about the \( P(1,1) \).
     b) It’s scaled by twice of its size.

UNIT-III

Q.6  a) Differentiate between rotation in 2D and 3D.
     b) Derive transformation matrix to translate a unit cube twice toward the origin.

Q.7  What do you mean by projection? Explain in details.

UNIT-IV

Q.8  Write a program in C language to draw a pattern given below:

Q.9  a) What is the importance of functions initgraph and closegraph? Explain in details.
     b) Explain and show the use case of following functions.
        i) random ()
        ii) Floodfill ()
        iii) Putpixel ()
        iv) outtextxy ()
Q.1
a) A sample can be defined as a:
   i) Population of interest to a researcher.
   ii) Quota from within the whole population.
   iii) Subset of a population representative of the population of interest to the researcher.
   iv) Criterion used to define eligibility for the research study.
b) Find the probability for X=8 in binomial distribution with n=10 and P=0.5.
c) Order of convergence of regula-falsi method is ________.
d) If \( f(x) = 0 \) has a root between a and b then \( f(a) \) and \( f(b) \) are of ________ sign.
e) The line obtained by the method of least square is known as the line of ________.
   i) Straight line.
   ii) Second degree equation.
   iii) Best fit.
   iv) Polynomial equation.
f) Iteration method is a ___________ method.
   i) Direct
   ii) Indirect
   iii) Self correcting
   iv) Step by step
g) __________ is used to denote the process of finding the values inside the interval \((x_0, x_n)\).
   i) Interpolation
   ii) Extrapolation
   iii) Iterative
   iv) Polynomial equation
h) Lagrange's interpolation formula is used to compute the values for ________ interval.
   i) Equal
   ii) Unequal
   iii) Open
   iv) Closed
i) __________ errors are caused by using approximation.
   i) Inherent
   ii) Roundoff
   iii) Truncation
   iv) Numerical
j) In which of the following methods proper choice of initial values is very important?
   i) Newton Raphson method.
   ii) Iterative method.
   iii) Regula falsi method.
   iv) Bisection method.

UNIT-I

Q.2
a) Round off the following numbers to four significant figures:
   i) 0.0022218  ii) 38.5632  iii) 0.01234
b) Discuss bisection method to find real roots of algebraic equation. Is this method converges always? Evaluate \( \sqrt[3]{12} \) correct to 3-decimal places using this method.

Q.3
a) Describe R.K. method to find approximate value to \( y \) for \( x=0.2 \) in steps of 0.1 if \( \frac{dy}{dx} = x + y^2 \) given that \( y = 1 \) and \( x = 0 \).
b) Find by Newton-Raphson method, a root of the equation \( x^3 - 3x + 1 = 0 \)

\[ \text{UNIT-II} \]

Q.4  
\[ \text{a)} \] Use Newton’s divided difference formula to find: \( f(3) \) from the following data:

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>1</td>
<td>14</td>
<td>15</td>
<td>5</td>
<td>6</td>
<td>19</td>
</tr>
</tbody>
</table>

\[ \text{b)} \] Find the cubic polynomial which takes the following value:

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

Q.5  
\[ \text{a)} \] Using Newton’s forward formula find the value of \( f(1.6) \):

<table>
<thead>
<tr>
<th>( x )</th>
<th>1</th>
<th>1.4</th>
<th>1.8</th>
<th>2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f(x) )</td>
<td>3.49</td>
<td>4.82</td>
<td>5.96</td>
<td>6.5</td>
</tr>
</tbody>
</table>

\[ \text{b)} \] The function \( y = f(x) \) is given in the points (7, 3), (8, 1), (9, 1) and (10, 9). Find the value of \( y \) for \( x = 9.5 \) using Lagrange’s interpolation formula.

\[ \text{UNIT-III} \]

Q.6  
\[ \text{a)} \] Write a short note on Newton’s cotes quadrature formula. Find \( \int_{-1}^{1} \frac{2}{x} \, dx \) by using Simpson’s \( \frac{1}{3} \text{rd} \) rules. Compute the result with exact value.

\[ \text{b)} \] Describe least square method to fit a parabola. Fit a parabola to the following:

<table>
<thead>
<tr>
<th>( x )</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>4.63</td>
<td>2.11</td>
<td>0.67</td>
<td>0.09</td>
<td>0.63</td>
<td>2.15</td>
<td>4.58</td>
</tr>
</tbody>
</table>

Q.7  
\[ \text{a)} \] Describe Simpson’s \( \frac{1}{3} \text{rd} \) rule for numerical integration. Evaluate \( \int_{-3}^{3} x^4 \, dx \) by taking 6 sub interval using:

i) Trapezoidal rule.

ii) Simpson’s \( \frac{1}{3} \text{rd} \) rule.

\[ \text{b)} \] By the method of least square method, find the straight line that best fit the following data:

<table>
<thead>
<tr>
<th>( x )</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y )</td>
<td>14</td>
<td>27</td>
<td>40</td>
<td>55</td>
<td>68</td>
</tr>
</tbody>
</table>

\[ \text{UNIT-IV} \]

Q.8  
\[ \text{a)} \] Describe Chi-square goodness of fit test.

\[ \text{b)} \] Eight coins are thrown simultaneously. Using binomial distribution, show that the probability of obtaining at least 6 heads is 0.1445.
Q.9  

a) Define binomial distribution. Discuss its properties. State the conditions when this distribution tends to Poisson distribution.

b) A factory produces blades in packets of 10. The probability of a blade to be defective is 0.2%. Find the number of packets having 2 defective blades in a consignment of 10,000 packets.
End Semester Examination, Dec. 2015
BCA – Fifth Semester
BUSINESS COMMUNICATIONS AND CONVERSATIONAL SKILLS-III
(BCA-506)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: All questions are compulsory:

Q.1 Read each sentence and determine the meaning of the word (in capital letters) in the given content. Also write at least three synonyms of each word.
   a) Katie talked back to the principle and called him by his first name, so he sent her to the office for her INSOLENCE.
   b) The players got caught cheating in the exam, the coach REBUKED them harshly.
   c) He was well known for his EMINENCE in photography.
   d) There was a large crowd that followed the OBSEQUIES of the grand old man of the town.
   e) John gave me two tickets to the basketball game, but I have an AVERSION to going to the crowded place.

Q.2 Fill in the blanks by with correct form of the verb (given in bracket).
   a) We ________ for his call since 4:20 (wait)
   b) Every day last week my aunt ________ a plate. (break)
   c) Our quests ________, they are sitting in the garden. (arrive)
   d) I know all about the film because I ________ it twice. (see)
   e) We ________ our breakfast half an hour ago. (finish)
   f) She jumped off the bus while we ________ tennis. (play)
   g) I ________ a strange noise. (hear)
   h) I ________ english for 5 years. (study)
   i) This paper ________ twice weekly. (appear)
   j) Speaking and communicating are synonymous (True/False)

Q.3 The word ‘great’ is often used in collocations with feelings or qualities. Supply at least five English collocations with the word ‘GREAT’.

Q.4 Supply source suitable adverbs to collect with the following words to soften their meaning:
   a) Different.
   b) Surprise.
   c) Based.
   d) Ridiculous.
   e) Offensive.

Q.5 Define the term “group discussion”. Highlight some do’s and don’ts in a group discussion.

Q.6 How is empathy different from sympathy? Give a real life example where you have used empathy to create a social difference.

Q.7 Write down the antonym of these words:
Q.8 Write down the meaning of these phrasal verbs and create a journal of a weekly business meeting. The phrasal words must fit in contextually.
   a) Bring up.
   b) Run through.
   c) Get on to.
   d) Leave aside.
   e) Come back to.
   f) Spell out.

Q.9 Write a short note on *any one* of the following:
   a) The importance of conversational skills.
   b) Barriers to listening.
End Semester Examination, Dec. 2015  
BCA – Sixth Semester  
JAVA PROGRAMMING (BCA-601A)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1

Note: Attempt \textit{FIVE} questions in all; \textit{taking at least ONE question} from each Unit. \textbf{Q.1 is compulsory.} All questions carry equal marks.

\textbf{Q.1} State whether \textit{true} or \textit{false}:

a) Initializing a local variable is mandatory in java.  
b) We can have more than one constructor in java.  
c) Javac is the compiler in java.  
d) ‘else’ can not be used without ‘if’.  
e) A local variable can be static.  
f) Exception is the parent class of all the exceptions.  
g) Java is a platform independent language.  
h) Action performed is a method used for event handling.  
i) ’super’ refers to the parent class object.  
j) AWT stands for abstract window tools

\textbf{UNIT-I}

\textbf{Q.2} a) Differentiate between Java and C++.

b) What is a variable? How do we declare a variable and use it?

\textbf{Q.3} Write short notes on:

a) Boolean  
b) Casting  
c) Byte-code

\textbf{UNIT-II}

\textbf{Q.4} What is an operator? What are the different types of operators in java? Explain with suitable examples.

\textbf{UNIT-III}

\textbf{Q.5} a) Define event and event handler.  
b) Discuss the types of inheritance.  
c) How is an interface defined? Give example.

\textbf{UNIT-IV}

\textbf{Q.6} a) What is an object? How is an object passed as an argument?  
b) Explain the concept of arrays. What different types of arrays are available in java?

\textbf{Q.7} a) What is a function? How are function defined in java? Explain with suitable example.  
b) What are static variables and static functions? Explain them.

\textbf{UNIT-IV}

\textbf{Q.8} Write short notes on:

a) Final keyword  
b) Abstract class  
c) Method overriding

\textbf{Q.9} a) Differentiate between AWT and swing.  
b) Explain the concept and importance of interfaces in details.
Q.1 **Fill in the blanks:**
   a) In the __________ layer, the data unit in called frames.
   b) Layer 2 lies between the physical layer and the __________ layer.
   c) ______________ is the connection less protocol.
   d) Router functions in the __________ layer.
   e) ARQ stands for ______________.

**Answer the following in two lines:**

   f) What is an IP address?
   g) Define cryptography.
   h) What is TELNET?
   i) Define a router.
   j) What is the full form of TCP/IP?

---

**UNIT-I**

Q.2 Define various transmission modes with a suitable example.  

Q.3 Write notes on:
   a) Guided media.
   b) Unguided media.

**UNIT-II**

Q.4 Explain the following layers in OSI reference model:
   a) Data link layer.
   b) Network layer.
   c) Application layer.

Q.5 What is the difference between error detection method and error detection and correction methods? Explain any two methods of error detection with suitable examples.

**UNIT-III**

Q.6 What is a network topology? Explain any three network topologies with their advantages and disadvantages. Draw the suitable diagram also.

Q.7 Write short notes on:
   a) Bridges and hubs.
   b) Routers.
   c) Gateways.

**UNIT-IV**

Q.8 Describe switching. Differentiate between circuit switching and packet switching in detail.
Q.9 Describe cryptography. Explain public key cryptography method with a suitable example.
Q.1 Multiple choice questions:
   a) One of the disadvantage of multimedia is:
      i) Cost  
      ii) Adaptability
      iii) Usability  
      iv) Relativity
   b) The text color in presentation should contrast with __________ color.
      i) CPU  
      ii) Frame
      iii) Stack  
      iv) Background
   c) A smaller version of an image is called:
      i) Thumbnail  
      ii) bitmap
      iii) Clipart  
      iv) None of the above
   d) ________ is used to compress image.
      i) JPEG  
      ii) MPEG
      iii) Both i) and ii)  
      iv) None of the above
   e) ________ refers to any type of applications that involves more than one type of media such as text, graphics, video and sound.
      i) An executable file  
      ii) Desktop publishing
      iii) Multimedia  
      iv) Hypertext
   f) The process of planning your presentation is known as:
      i) Design  
      ii) Storyboard
      iii) Development  
      iv) Layout
   g) __________ is a special effect used to introduce each slide in a presentation.
      i) Animation  
      ii) Bulleting
      iii) Transition  
      iv) Mapping
   h) The first slide in a presentation usually reserved for:
      i) Introduction  
      ii) Author
      iii) Master  
      iv) Title.
   i) Quick access to frequently used command can be found in the ______ toolbar.
      i) View  
      ii) Drawing
      iii) Kit  
      iv) Menu
   j) MPEG stands for:
      i) Motion Video Expert Grade.
      ii) Motion Picture Expert Group.
      iii) Motion Photographic Expert Group.
      iv) None of the above.

UNIT-I

Q.2 Explain following in brief:
   a) Need of multimedia.
   b) Multimedia system architecture.
   c) Hardware requirement of multimedia.
Q.3 Explain input and output devices used in multimedia.  

UNIT-II

Q.4 What are the different text conversion formats available in multimedia? Explain each with an example.  

Q.5 How object linking and embedding is helpful in designing a multimedia application?  

UNIT-III

Q.6 Explain following: 
   a) Source encoder and destination.  
   b) Source encoding.  
   c) Compression.  

Q.7 Differentiate between the following: 
   a) Lossless and lossy compression.  
   b) JPEG and MPEG.  
   c) Source encoder and decoder.  

UNIT-IV

Q.8 What do you mean by a key frame system? What is need of it? What are the advantages and disadvantages of it? Explain in detail.  

Q.9 Write short notes on: 
   a) Morphing.  
   b) Tweening.  
   c) 2-D animation.  
   d) Kinematics.  
   e) Pixel depth.
End Semester Examination, Dec. 2015
BCA - Sixth Semester
INSTALLING, CONFIGURING, MAINTAINING AND
TROUBLESHOOTING A PC/NETWORKING AND PERIPHERALS AND
WORKING WITH MS-OFFICE (BCA-605)

Time: 3 hrs  Max Marks: 75
No. of pages: 4

Note:  Attempt all the questions are compulsory. Question No.1 is of 1 marks. Question No. 2 to 38 are of 2 marks each. This is a question paper cum answer sheet Tick (✓) the correct answer from the options given below the each question.

Q.1  What is the extension of MS-EXCEL file?
   a)  .xls  b) .doc  c) .cod  d) .odc

Q.2  What is the size of A4 size page in mm?
   a)  215*290 mm  b) 220*395 mm  c) 210*297 mm  d) 205*285 mm

Q.3  What is the short key to print a page?
   a)  Ctrl+P  b) Ctrl+M  c) Shift+M  d) Alt+P

Q.4  What is the extension of PowerPoint file?
   a)  .lxs  b) .xle  c) .ppt  d) .xle

Q.5  Full form of CMOS.
   Ans: __________________________________________________________.  

Q.6  What is the smallest and largest font size available in font size tool on formatting toolbar?
   a)  8 and 72  b) 8 and 68  c) 6 and 72  d) 6 and 68

Q.7  Using find command in Word, we can search.
   a)  Characters  b) Formats  c) Symbols  d) All of the above

Q.8  Which shortcut key is used to spell check in MS-Word?
   a)  F1  b) F2  c) F7  d) F9

Q.9  What is gutter margin?
   a)  Margin that is added to the left margin when printing.  
   b)  Margin that is added to right margin when printing.  
   c)  Margin that is added to the binding side of page when printing  
   d)  Margin that is added to the outside of the page when printing
Q.10 Portrait and landscape are:
   a) Page orientation      b) Paper size
   c) Page layout            d) All of above  2

Q.11 Which of the following section does not exist in a slide layout?
   a) Titles                  b) Lists
   c) Charts                  d) Animations  2

Q.12 A new presentation can be created from:
   a) Blank presentation      b) From existing presentation
   c) From design template    d) All of the above  2

Q.13 The selected design template can be applied.
   a) to current slide only   b) to all the slides
   c) to all the new presentation you create  d) All of the above  2

Q.14 Which short cut key insert a new slide in current presentation?
   a) Ctrl+N                  b) Ctrl+M
   c) Ctrl+S                  d) All of above  2

Q.15 In a PowerPoint presentation.
   a) Sound clips can be inserted but not movie clips
   b) Movie clips can be inserted but not sound clips
   c) Both cannot be inserted
   d) Both can be inserted  2

Q.16 Which of the following is not a basic step in creating a worksheet?
   a) Save workbook           b) Modify the worksheet
   c) Enter text and data     d) Copy the worksheet  2

Q.17 To create a formula, you first:
   a) Select the cell you want to place the formula into
   b) Type the equals sign (=) to tell Excel that you’re about to enter a formula
   c) Enter the formula using any input values and the appropriate mathematical
      operators that make up your formula
   d) Choose the new command from the file menu  2

Q.18 When a label is too long to fit within a worksheet cell, you typically must:
   a) Shorten the label        b) Increase the column width
   c) Decrease the column width d) Adjust the row height  2

Q.19 To copy cell contents using drag and drop press the:
   a) End key                  b) Shift key
   c) Ctrl key                 d) Esc key  2

Q.20 Comments put in cells are called:
   a) Smart tip              b) Cell tip
   c) Web tip                d) Soft tip  2

Q.21 Who is the father of computer science?
   a) Allen turning           b) Charles Babbage
   c) Simur cray              d) Augusta adaming  2
Q.22 You organize files by storing them in:
   a) archives  b) folders
   c) indexes    d) lists

Q.23 Which device is required for the internet connection?
   a) Joystick   b) Modem
   c) CD drive   d) NIC card

Q.24 UNIVAC is:
   a) Universal automatic computer
   b) Universal array computer
   c) Unique automatic computer
   d) Unvalued automatic computer

Q.25 A computer cannot 'boot' if it does not have the:
   a) Compiler  b) Loader
   c) Operating system   d) Assembler

Q.26 When a file is saved for the first time?
   a) A copy is automatically printed
   b) It must be given a name to identity it
   c) It does not need a name
   d) It only needs a name if it is not going to be printed

Q.27 ASCII stands for:
   a) American stable code for international interchange
   b) American standard case for institutional interchange
   c) American standard code for information interchange
   d) American standard code for interchange information

Q.28 The output quality of a printer is measured by:
   a) Dot per inch    b) Dot per sq. inch
   c) Dots printed per unit time   d) All of the above

Q.29 Examples of output devices are:
   a) Screen  b) Printer
   c) Speaker     d) All of the above

Q.30 BIOS stand for:
   a) Basic input output system
   b) Binary input output system
   c) Basic input off system   d) All of the above

Q.31 The brain of any computer system is:
   a) ALU    b) Memory
   c) CPU    d) None of the above

Q.32 An optical input device that interprets pencil marks on paper media is:
   a) O.M.R.    b) Punch card reader
   c) Optical scanners   d) Magnetic tape
Q.33 A _________ is a device that forwards packets between networks by processing the routing information included in the packet.
   a) Bridge                      b) Firewall
   c) Router                      d) All of the above

Q.34 Network congestion occurs:
   a) In case of traffic overloading
   b) When a system terminates
   c) When connection between two nodes terminates
   d) None of the mentioned

Q.35 A piece of icon or image on a web page associated with another webpage is called:
   a) URL                         b) Hyperlink
   c) Plugin                      d) None of the above

Q.36 URL stands for:
   a) Unique reference label      b) Uniform reference label
   c) Uniform resource locator    d) Unique resource locator

Q.37 Magnetic disk is an example of:
   a) Secondary memory            b) Primary memory
   c) Main memory                 d) Both (a) and (b)

Q.38 Which of the following is a network topology?
   a) LAN                         b) WAN
   c) MAN                         d) BUS
End Semester Examination, Dec. 2015
BCA -First Semester
FUNDAMENTALS OF INFORMATION TECHNOLOGY AND PROGRAMMING TECHNIQUES (BCA-1001)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Multiple choice questions:
   a) Linker links the following with source code:
      i) Library files
      ii) Objects
      iii) Data files
      iv) None of the above.
   b) ROM stand for:
      i) Read only memory
      ii) Read only once
      iii) Real only memory
      iv) None of the above.
   c) Which of the following is not an application software?
      i) Word processor
      ii) Spread sheet
      iii) Operating system
      iv) Browser
   d) Which storage device cannot be erased?
      i) CD-ROM
      ii) DVD
      iii) Magnetic tape
      iv) Floppy disk
   e) Which symbol represent top down approach?
      i) ↓
      ii) ↑
      iii) π
      iv) None of the above.
   f) The ALU responds to the commands coming from:
      i) Primary memory
      ii) Control section.
      iii) External memory
      iv) Cache memory
   g) Dot-matrix is a type of:
      i) Tape
      ii) Printer
      iii) Disk
      iv) BUS
   h) To produce high quality graphics (hard copy) in color, one would require to use, a/an:
      i) RGB monitor
      ii) Plotter
      iii) Inkjet printer
      iv) Laser printer.
   i) What input device can be used for marking a multiple choice test?
      i) Mouse
      ii) Bar code reader
      iii) OCR
      iv) None of the above.
   j) A laser printer does not use?
      i) A print head
      ii) A laser beam
      iii) A photo conductive drum
      iv) None of the above.

UNIT-I

Q.2 a) Draw a block diagram to illustrate the basic organization of a computer system, and explain the functions of its various units. 10
   b) Is a computer more intelligent than human beings? Justify your answer. 5

Q.3 a) What is a ROM? Why is it so called? Give few typical uses of ROM. 7
   b) What is cache memory? How is it different from a primary memory? 8
UNIT-II
Q.4 What is a magnetic tap drive? Describe the main components and the basic operation mechanism of a half inch magnetic tape reel drive. 15

Q.5 What is a printer? What are the commonly used types of printers? Differentiate between impact and non-impact printers. Name few printers of both types. 15

UNIT-III
Q.6 What is a flowchart? How does a flowchart help a programmer in program development? What are the various guidelines to be followed while drawing a flowchart? 15

Q.7 Write an algorithm and also draw the flowchart to print the factorial of a number entered by the user. 15

UNIT-IV
Q.8 Write short notes on:
   a) Decision table.
   b) Pseudo codes.
   c) Decision tree. 5x3

Q.9 a) Explain the concept of structured programming. 5
   b) What do you understand by modular approach? Differentiate between top down and bottom up approach. 10
End Semester Examination, Dec. 2015  
BCA -First Semester  
PROGRAMMING IN ‘C’ (BCA-1002)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1  

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) ______ operator reverses the value of the expression.  
b) AC program ends with a ______.  
c) The ______ statement is used to skip statements in a loop.  
d) An array occupies ______ memory locations.  
e) A multi-dimensional array in simple terms is an ______.  
f) Size of character pointer is ______.  
g) Pointers are nothing but ______.  
h) A ______ is a collection of variables under a single name.  
i) A structure is similar to ______.  
j) The symbolic constant EOF is defined in ______.  

1½x10

Q.2 a) What are header files? Why they are important? Can one write a C program without using any header file?  
b) Write a program to read an integer. Then display the value of that integer in decimal, octal and hexadecimal notation.  

7  
8

Q.3 a) Differentiate between type casting and type conversion.  
b) What are variable? Explain the difference between declaration and definition. How is memory reserved using a declaration statement?  

5  
10

Q.4 Write a program using switch case to display a menu that offers five options: read three numbers, calculate total, calculate average, display smallest and display largest value.  

15

Q.5 Differentiate between call-by-value and call-by-reference using suitable examples.  

15

Q.6 a) Discuss sparse matrix.  
b) Write a program to count total number of non-zero elements in a two-dimensional array.  

5  
10

Q.7 a) What is a file? Why do one need to store data in files?  
b) Differentiate between gets( ) and fgets( ).  

8  
7

Q.8 Write a program to write employee details in a file called employee.det. Then read the record of the new employee and calculate his salary.  

15

Q.9 a) Discuss the various modes of opening a data file in C.  
b) Write a note on storage classes.  

8  
7
End Semester Examination, Dec. 2015
BCA - First Semester
ENVIRONMENTAL STUDIES (BCA-1003)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Choose the correct option:
a) The group of organisms which convert light into food are called.
   i) Autotrophs
   ii) Heterotrophs
   iii) Decomposers
   iv) Omnivores
b) Vermicomposting is done by:
   i) Fungus
   ii) Worms
   iii) Bacteria
   iv) Animals
c) Biotic environment includes.
   i) Producers
   ii) Consumers
   iii) Decomposers
   iv) All of the above
d) The major pollutant from automobile exhaust is:
   i) No
   ii) Co
   iii) SO₂
   iv) Soot
e) A high biological oxygen demand (BoD) indicates that:
   i) Water is pure
   ii) Absence of microbial pollution
   iii) Low level of microbial pollution
   iv) High land of microbial pollution
f) The main atmospheric layer near the surface of earth is:
   i) Troposphere
   ii) Mesosphere
   iii) Inosphere
   iv) Stratosphere.
g) Which of the following is responsible for dengue?
   i) Anopheles mosquito
   ii) Culex mosquito
   iii) Aedes mosquito
   iv) Housefly
h) What is sex ratio?
   i) No. of females per thousand males.
   ii) No. of females per hundred of males.
   iii) The study of population growth.
   iv) Difference between birth rate and death rate.
i) Which is the most popular country of the world:
   i) India
   ii) USA
   iii) China
   iv) Russia
j) Which one of the following activities constitutes primary activities?
   i) Fishing
   ii) Teaching
   iii) Construction
   iv) Manufacturing

UNIT-I

Q.2 a) Explain the multidisciplinary role of environmental studies. 8
b) “Public awareness about cleanliness is “Swatchta Abhiyan” has brought the change”. Explain. 7

Q.3 a) Write various steps by which an individual can conserve natural resources. 8
b) Differentiate between sustainable and unsustainable resources. 7

UNIT-II

Q.4 a) Mention various components of an ecosystem. How do they help each other? 8
b) Explain different types of ecological pyramids with suitable diagrams.  

Q.5  
  a) Explain through example energy flow in an ecosystem.  
  b) What do you mean by hotspot? How many hotspots are there in India?  

UNIT-III  

Q.6  
  a) What do you mean by pollution? What are its various types and their causes?  
  b) State different side effects of environmental pollution.  

Q.7  
  a) How has ozone layer got depleted? What are its consequences?  
  b) How can Govt. help to resolve these pollution problems?  

UNIT-IV  

Q.8  
  a) What are the different factors on which the population growth of a nation depends?  
  b) What are the disadvantages of population explosion?  

Q.9  
  a) Explain how environment and human health are related?  
  b) What do you understand by the term “Sexually transmitted diseases”? Give some examples. How can we avoid them?
End Semester Examination, Dec. 2015  
BCA -First Semester  
BASIC MATHEMATICAL SKILLS (BCA-1004)  

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2  

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) Define a Rectangular matrix.
b) Solve \( 4\sqrt{16^3} \)
c) Complete the formula:  
\[ \log_a \frac{mn}{a} = \log_a m + \log_a n \]
d) The 7th term of B.P. sequence 9, 12, 15, 18 ..........is ...............  
e) What is a singular matrix?  
f) Find co-factor of \( A_{21} \) of the matrix:  
\[ A = \begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix} \]
g) If  
\[ A = \begin{bmatrix} 2 & -1 \\ 4 & 2 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} \]  
find \( A + B \).  
h) Give the full expression for Taylor’s series.  
i) What are allied angles?  
j) \( \lim_{x \to 0} \left[ c \times f(n) \right] \)

UNIT-I

Q.2 a) If  
\[ A = \begin{bmatrix} 1 & 4 \\ 3 & 2 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} -1 & 2 \\ 0 & 5 \end{bmatrix} \]  
then find the matrix \( \times \) for which \( A + B \times = 0 \).  
b) If  
\[ A = \begin{bmatrix} 3 & 5 \\ 2 & 7 \end{bmatrix} \]  
then find \( A^{-1} \).

Q.3 a) Verify Cayley-Hamilton theorem for the given matrix \( A \):  
\[ A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 1 \\ 3 & 3 & 1 \end{bmatrix} \]  
b) Find the rank of matrix:  
\[ A = \begin{bmatrix} 3 & 2 & 7 \\ 4 & -3 & -2 \\ 5 & 9 & 23 \end{bmatrix} \]

UNIT-II

Q.4 a) Find the sum of all natural numbers between 100 and 1000 which are multiple of 5.  
b) Find the middle term in the expansion of  
\( \left( x^2 - \frac{2}{x} \right)^{10} \).
Q.5  
   a) In how many ways can the letters of the word ‘UNIVERSAL’ be arranged? In how many of these will E, R, S always occur together?  
   b) Prove that:  
   \[ \frac{2^n + 2^{n-1}}{2^{n+1} - 2^n} = \frac{3}{2} \]  

UNIT-III  

Q.6  
   a) Prove that:  
   \[ \frac{\tan A + \sec A - 1}{\tan A - \sec A + 1} = \frac{1 + \sin A}{\cos A} \]  
   b) Find the value of:  
   \[ \frac{2 \log 6 + 6 \log 2}{4 \log 2 + \log 27 - \log 9} \]  

Q.7  
   a) Prove that:  
   \[ \sin 10^\circ \sin 50^\circ \sin 60^\circ \sin 70^\circ = \frac{\sqrt{3}}{16} \]  
   b) Find the value of:  
   \[ \log 2 + 16 \log \frac{16}{15} + 12 \log \frac{25}{24} + 7 \log \frac{81}{80} = 1 \]  

UNIT-IV  

Q.8  
   a) If  
   \[ f(x) = \begin{cases} \frac{x^2}{x-1}, & \text{when } x \neq 1 \\ \frac{x}{2}, & \text{when } x = 1 \end{cases} \]  
   show that \( f(x) \) is continuous at \( x = 1 \).  
   b) Evaluate:  
   \[ \lim_{x \to 0} \frac{\sin 5x}{\sin 15x} \]  

Q.9  
   a) Differentiate w.r.t \( x \) 
   \[ \frac{x^2 - 1}{(x^2 + 7x + 1)} \]  
   b) Expand \( \log(1 + x) \) in power’s of \( x \) by Maclaurin’s therem.
END SEMESTER EXAMINATION, DEC. 2015
BCA - FIRST SEMESTER
ENGLISH LANGUAGE PROFICIENCY-I (BCA-106/BCA-1005)

NOTE: ATTEMPT ALL QUESTIONS:

Q.1 Answer the following questions (ANY FIVE):
   a) What are the two types of calls?
   b) What are the types of nouns?
   c) What are adjectives? Give an example.
   d) How many vowels and consonants are there in English alphabet? Name them.
   e) What are voiced and unvoiced consonant sound?
   f) What are the three types of vowel sounds?

Q.2 Underline the sound for the given VOWEL SOUNDS:
   a) EAGLE
   b) UNICORN
   c) SNOW
   d) FOOD
   e) CHURCH

Q.3 Fill in the blanks with “a”, “an” or “the”:
   a) _______ ambulance takes sick people to the hospital.
   b) The policeman wears _______ uniform.
   c) Do you have _______ extra tyre?
   d) _______ eagle can fly high in the air.
   e) There is _______ nest on the tree.

Q.4 Write the contracted form of the given words:
   a) He + is = ___________________
   b) They + are = ___________________
   c) Can + not = ___________________
   d) It + is = ___________________
   e) Did + not = ___________________

Q.5 Fill in the blanks with a suitable determiner,
   a) Is there _______ bread here for all of you?
   b) I admit that I don’t have _______ knowledge of the subject.
   c) We must bring _______ food to last us the whole week.
   d) Let’s run. We don’t have _______ time to catch the train.
   e) There isn’t anything _______ that we can do now. So let’s go home.

Q.6 Underline the consonant sounds in the given words:
   a) ANSWER
   b) CASE
   c) SORE
   d) CINEMA
   e) SERIOUS
Q.7 Change the following sentences into (given in brackets):
   a) Mom is going to cook spinach tonight. (negative)
   b) Is Grandma’s situation serious? (positive)
   c) Dad’s car broke down yesterday. (interrogative)
   d) He doesn’t like shopping. (interrogative)
   e) Are you going to United States? (negative) 1x5

Q.8 Use the Present Continuous / Simple Past / Present Perfect Continuous / Past Perfect Continuous in the following sentences:
   a) John ________ (want) to join the medical college, but he __________ to get (fail).
   b) I am sick of rain and bad weather! Hopefully, when we (wake) _______________ up tomorrow morning, the sun (shine) _______________
   c) Right now, I am watching TV. Tomorrow at this time, I (watch) _______________ TV as well. 1x5

Q.9 Arrange the words to make sentences:
   a) are/ measurements/ amount/ of/ the/ calories/ of/ energy/ provided/ by/ different/ foods.
   b) overweight/ get/people/ take/ in/ they/ when/ calories/ more/ energy/ or/ than/ use/ up/ they daily/ activities/ in.
   c) extra/ energy/ the/ in/ the/ body/ stored/ is/ form/ of/ fat/ in/ the.
   d) snake/ poisonous/ uses/ the/ to/ its enemy/ and/ it prey/ its/ venom/ kill.
   e) injects/ it/ into/ through/ porous/ the venom/ the body/ its/ fangs.
   f) its effect/ until/ mixed/ blood/ in the/ snake venom/ the/ does/ show/ not/ it gets.
   g) will/ again/ apologize/ never/ he/ I/ here/ if/ him/ not/ invite.
   h) It/ when/ is burnt/ poisonous gases/ polythene/ emits.
   i) it/ disposed of/ if can block/ it/ the drains/ is/ carelessly.
   j) bring about/ as no-biodegradable/ sanitary problems/ it/ polythene. 1x10

Q.10 Write a paragraph on the topics given below in 100 words:
   a) Social networking sites.
   b) To be an effective CEO. 5x2

Q.11 Answer any two questions in 80-100 words:
   a) How do dogs make wonderful pets?
   b) Is it important to be ready before buying a house? 5x2
End Semester Examination, Dec. 2015
BCA-Second Semester
DATA STRUCTURES (BCA-2001)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1
a) ___________ is ordered set of homogeneous elements.
b) ___________ is also called one way list.
c) Queue is based on LIFO (True/False)
d) There are three variations of deque (True/False)
e) The nodes with no successor are called terminal nodes (True/False)
f) The depth of tree in maximum no of nodes in a branch of tree. (True/False)
g) An edge e is called loop if it has ___________ end points.
h) Edges e and e are called multiple edges if they connect ___________ end points
i) ___________ is a linear list based on lifo:
   i) Stack
   ii) Queue
   iii) Linklist
j) Accessing each record exactly once is called:
   i) traversing
   ii) Merging
   iii) Sorting

UNIT-I

Q.2
a) Consider the linear array AAA (5:50) BBB (-5:10) and CCC (1:18)
   i) Find no of elements in each array.
   ii) Base (AAA) = 300 and W=4 words find the address of AAA [15], AAA [35] and AAA [55]
   b) What are the advantages and disadvantages of using array?

Q.3
a) Briefly describe the notation of complexity of an algorithm.
b) Discuss all the operations of data structure.

UNIT-II

Q.4
a) Consider the following arithmetic expression in postfix notation P
   \[ P : 12,7,3,−,+,2,1,5,+,∗,\uparrow, \] evaluate the post fix expression P.
b) Write a short note on circular queues.

Q.5
a) Convert into postfix notation. Explain step by step \[ X = ((A + B) ∗ D) \uparrow (E − F) \].
b) Write a short note on matching parenthesis.

UNIT-III

Q.6
a) A binary tree has a node. In order and Preorder traversal of tree yield following sequence of nodes.

<table>
<thead>
<tr>
<th>In order</th>
<th>E</th>
<th>A</th>
<th>C</th>
<th>K</th>
<th>F</th>
<th>H</th>
<th>D</th>
<th>B</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preorder</td>
<td>F</td>
<td>A</td>
<td>E</td>
<td>K</td>
<td>C</td>
<td>D</td>
<td>H</td>
<td>G</td>
<td>B</td>
</tr>
</tbody>
</table>

Draw the tree T
b) Define:  
i) Similar binary trees
ii) Complete binary trees
Q.7  Define:
   a) Graph 
   b) Multigraph 
   c) Directed graph 
   d) General tree 
   e) Binary tree 
   f) Path 
   g) Circuit

UNIT-IV

Q.8  a) Write an algorithm to sort the list using insertion sort method.  
     b) What is difference between sorting and searching?

Q.9  What is collision? What is hashing? Discuss various collision handling techniques. Give 
     example of each.
Q.1 Answer the following by choosing the correct option:

a) Address is an example for ___________ attribute.
   i) Relational  ii) Composite  iii) Hierarchical  iv) None of these

b) A ___________ is an association among several entities.
   i) Relationship  ii) Key  iii) Partial  iv) None of these

c) DML is a language that allows.
   i) To define data  ii) To define relationships 
   iii) To add new rows  iv) All of the above

d) In the relational model, the number of rows in a table is termed as:
   i) Cardinality  ii) Degree  iii) Domain  iv) None of these

e) The number of entity types that participate in a relationship is called:
   i) Number  ii) Degree  iii) Counter  iv) Member

f) And NF refers to.
   i) Foreign key  ii) Primary key
   iii) Multivalued dependencies  iv) None of the above

g) Security measures can be taken at.
   i) Physical level  ii) Human level
   iii) Operating system level  iv) All of the above

h) Two phase in locking protocols are.
   i) Deadlock  ii) Cascading rollback
   iii) Both i) and ii)  iv) None of the above

i) The causes of failures includes.
   i) System crash  ii) Media failure
   iii) User error  iv) All of the above

j) Rewoke command allows.
   i) Withdrawl of privileges  ii) Read operation
   iii) Granting privileges  iv) None of the above

UNIT-I

Q.2 Differentiate between data and information. Explain three level architecture of DBMS and also discuss the levels of mapping between the levels. 15

Q.3 What is meant by ER diagram? Describe the various attributes and relationship constraints in ER diagram with example. 15

UNIT-II

Q.4 What are different types of relational operators? Explain traditional and special operators used in relational algebra with proper syntax and suitable example. 15

Q.5 Explain following SQL commands with proper syntax and example.
UNIT-III
Q.6 Explain normalization of databases and all the normal forms with example. 15
Q.7 Define the various problem of concurrency control. What are the different approaches used by concurrency control algorithms to solve these problems? Discuss. 15

UNIT-IV
Q.8 What are different types of failures? What is shadow-paging technique? Explain this technique along with its advantages and disadvantages. 15
Q.9 Why database security is important for an organization? Discuss the various techniques to implement database security in an organization. 15
Q.1 Multiple choice questions:

a) Give the decimal value of binary 10010.
   i) 6_{10}        ii) 9_{10}        iii) 18_{10}        iv) 20_{10}

b) The systematic reduction of logic circuits is accomplished by:
   i) Using Boolean algebra   ii) Symbolic reduction
   iii) TTL logic             iv) Using a truth table

c) When using even parity, where is the parity bit placed?
   i) Before the MSB        ii) After the LSB
   iii) In the parity word   iv) After the odd parity bit

d) The ALU carries out arithmetic and logic operations. It processes ______ numbers rather than decimal numbers.
   i) Decimal        ii) Hexadecimal
   iii) Binary       iv) All of the above

e) The master slave JK flip flop is effectively a combination of.
   i) An SR flip flop and a T flip flop
   ii) An SR flip flop and a D flip flop
   iii) Two T flip flops
   iv) None of the above

f) A combinational circuit which is used to send data coming from a single source to two or more separate destinations is called as.
   i) Decoder          ii) Encoder
   iii) Multiplexer     iv) Demultiplexer

g) Name the control unit which is once designed no further changes is possible.
   i) Hardwired
   ii) Microprogrammed
   iii) Firmware        iv) Programmed

h) Half adder circuit is __________.
   i) Half of an AND gate
   ii) A circuit to add two bits together
   iii) Half of a NAND gate
   iv) None of the above

i) An address in main memory is called.
   i) Physical address
   ii) Logical address
   iii) Memory address
   iv) Word address

j) The idea of cache memory is based.
   i) On the property of locality of reference.
   ii) On the heuristic 90-10 rule.
   iii) On the fact that references tend to cluster.
   iv) All of the above.

UNIT-I

Q.2 What are hamming codes? A seven bit hamming code is received as 1111001. Locate the error position and find the correct code.

Q.3 Perform the following:

a) \((6DE\cdot C)_{16} = ( \_ )_2 = ( \_ )_8 = ( \_ )_{10}\)

b) \((ADB\cdot E7)_{16} - (9FE\cdot FD)_{16}\)

c) \((767\cdot 32)_8 - (477\cdot 65)_8\)

1\frac{1}{2}x10

5x3
UNIT-II
Q.4  a) What are logic gates? Explain the various types of gates.            7
     b) Explain all the identities of Boolean algebra.                    8

Q.5  a) Find the cannonical SOP form for the expression given below:
     \[ F(A, B, C) = AB + A'B' + AC + A'C' \]                             10
     b) A majority function is generated in a combinational circuit when the output is equal to 1 if the input variables have more 1's than 0's. The output is 0 otherwise. Design a three input majority function. 5

UNIT-III
Q.6  Design a 4 bit binary up/down counter.                                 15

Q.7  What is a decoder? Construct a 5 to 32 line decoder with four 3 to 8 line decoder and with unable and one 2 to 4 line decoder. 15

UNIT-IV
Q.8  Explain the basic components of a microprocessor.                     15

Q.9  Describe classification of memory. Also explain associative memory. 15
End Semester Examination, Dec. 2015
BCA -Second Semester
CONCEPTUAL FOUNDATIONS OF MANAGEMENT (BCA-2004)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Multiple choice questions:
   a) The concept of scientific management was given by:
      i) Frederick Taylor  ii) Henry Fayel
      iii) Elton Mayo  iv) Peter Drucker
   b) Which one of the following is the most descriptive characteristic of a manager?
      i) Decisive  ii) Amiable
      iii) Kindly  iv) Agreeable

Fill in the blanks:
   c) The principles of management are the ________ for a manager.
   d) Management is basically _________ in nature.
   e) Staffing refers to _________ of right persons in the right jobs.
   f) Max Weber developed the concept of __________ management.
   g) Leaders exist in both _________ and _________ groups.
   h) Communication is _________ to every organisation.
   i) A manager must have qualities of a good _________.
   j) The decision-making process is _________ oriented. 1½x10

UNIT-I

Q.2 “Management is an art of getting work done through people”. Explain various functions of management in light of this statement. 15

Q.3 Explain Henry Fayol’s contribution of management thought. 15

UNIT-II

Q.4 Define the concept of planning. Elaborate various steps involved in the planning process. What are the factors which act as barrier’s to effective planning? 15

Q.5 Write short notes on:
   a) Process of decision-making. 8
   b) Types of plans. 7

UNIT-III

Q.6 “Effective organisation is the basis of successful enterprise”. Discuss the importance of organisation. 15

Q.7 Explain the following:
   a) Depart mentation and its bases. 8
   b) The importance of communication. 7

UNIT-IV
Q.8 What is leadership? What are its characteristics? Discuss the significance of leadership in modern business.

Q.9 Write notes on:
   a) Democratic leader.
   b) Qualities of a good leader.
End Semester Examination, Dec. 2015
BCA -Second Semester
ENGLISH LANGUAGE PROFICIENCY-II (BCA-2005)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt ALL questions:

Q.1 
**Choose the syllable that is stressed:**

a) Can you pass me a plastic knife?
b) Sparky is a very happy puppy.
c) China is the country where I was born.
d) There is a lot of traffic on the highway today.
e) Do you understand this lesson?
f) It is critical that you finish today.
g) My grandpa wears an old fashioned coat.
h) I want to take a photography class.
i) I can’t decide which book to borrow.
j) Please turn-off the television before you go.

Q.2 
**Fill in the blanks with correct pronouns:**

a) The old woman lived alone, with __________ to look after her.
b) As __________ cuts it as well as he does, I always have my hair cut at Jhonson’s.
c) When you call the office, ask for my assistant or ________ personally?
d) ________ and our neighbours have an on going dispute about the boundary line.
e) ________ and her mother have a very close relationship.
f) Every doctor is obligated to treat __________ patients with respect.
g) Someone who doesn’t install an anti-virus program on __________ computer is asking for trouble.
h) The jury has reached _________ verdict.
i) As a person grows up, _________ must start accepting responsibilities.
j) Everyone at the table has eaten _________ lunch earlier.

Q.3 
**Fill in the blanks with “a”, “an” or “the”:**

a) He drives at a speed of 90 miles _________ hour.
b) It’s _________ third road on the left.
c) The river Yamuna is _________ longest river of all.
d) _________ price of petrol keeps rising.
e) It’s in _________ Arthur road.

Q.4 
**Complete the exercise with appropriate prepositions:**

a) What is this called _________ English?
b) Nice _________ meet you.
c) Don’t run _________ the classroom.
d) The teacher wrote something _________ the board.
e) She was sitting _________ her car.

Q.5 
**Fill in the blanks with appropriate forms of the verb:**

a) No prize or medal _________ given to the boy, though he stood first in the examination.
b) Neither the minister nor his colleagues __________ given any explanation for this.
c) Oil and water ________ not mix.
d) One of my friends __________ gone to China.
e) He and I __________ at Oxford together.

Q.6  
Choose the correct verb:

a) Do you think he __________ what I said? (understand)
b) The window was already __________ when I got here. (break)
c) Last night I __________ on the carpet and fell asleep. (lie)
d) I __________ what was going to happen next. (wonder).
e) She __________ to learn English in next summer. (hope)

Q.7  
Fill in the blanks using appropriate modals:

a) __________ you please tell me the direction to the hotel.
b) I __________ go to see the movie. The reviews are good.
c) You __________ clean your room.
d) She __________ take her meals regularly.
e) We __________ improve the existing education system.
f) __________ we go for a walk.
g) It is very cloudy. It __________ rain.
h) You __________ be properly dressed when you come to office.
i) God is great and we __________ be grateful to him.
j) People __________ not tell lies.

Q.8  
What do you mean by open and closed ended questions? Differentiate between them citing appropriate examples.

Q.9  
Write a paragraph on the topics given below in 100 words:

a) To be an effective leader.
b) Disadvantages of social networking sites.

Q.10  
Answer the following questions in 80-100 words:

a) Is it beneficial to do online shopping?
b) The kind of stuff shown in movies; is it age appropriate?
End Semester Examination, Dec. 2015
BCA -Third Semester
PROGRAMMING IN C++ (BCA-3001)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2  

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1 Multiple choice questions:

a) What does a escape code represent?
   i) Backslash
   ii) Tab
   iii) Form feed
   iv) Alert

b) When a language has the capability to produce new data type means, it can be called as:
   i) Overloaded
   ii) Extensible
   iii) Encapsulated
   iv) Reprehensible

c) Choose one of the following.
   i) Struct is encapsulation
   ii) Class is encapsulation
   iii) Functions is encapsulation
   iv) Both i) and ii)

d) An array is a:
   i) Data structure with one, or more elements of the same type.
   ii) Data structure with LIFO access.
   iii) Data structure which allows transfer between internal and external storage.
   iv) Data structure which allows transfer between internal and external storage.

e) Where does the default parameter can be placed by the user?
   i) Leftmost
   ii) Rightmost
   iii) Both i) and ii)
   iv) None of the above.

f) In C++ __________ operator is used for dynamic memory allocation.
   i) Scope resolution
   ii) Conditional
   iii) New
   iv) Membership access

g) Where does keyword ‘friend’ should be placed?
   i) Function declaration
   ii) Function definition
   iii) Main function
   iv) None of the above

h) Access to private data or private methods is:
   i) Restricted to methods of the same class.
   ii) Restricted to methods of other classes.
   iii) Available to methods of the same class and other classes.
   iv) Not an issue became the program will not compile.

i) A function that is called automatically each time an object is destroyed as a:
   i) Destructor
   ii) Destroyer
   iii) Remover
   iv) Terminator

j) What is meant by multiple inheritances?
   a) Deriving a base class from derived class.
   b) Deriving a derived class from base class.
   c) Deriving a derived class from more than one base class.
   d) None of the above.

**UNIT-I**
Q.2 Explain the difference between object oriented programming and procedure oriented programming. 15

Q.3 a) Can we use the same function name for a member function of a class and an outside function in the same program file? If yes, how are they distinguished? If no, give reasons. 10
b) Define identifier. What are the rules to be followed for identifiers? 5

UNIT-II

Q.4 Write an interactive C++ program to perform the banking system. It includes deposit, withdraw, interest, balance query and loan process. The account number and initial amount is initialized using constructor. 15

Q.5 Explain about friend function with an example. What are the merits and demerits of using friend function? 15

UNIT-III

Q.6 What is operator overloading? Develop a C++ program to overload unary operator for processing the objects of a class called counter. 15

Q.7 What is inheritance? Explain the need for inheritance with suitable programming examples. 15

UNIT-IV

Q.8 a) Write a program to demonstrate the use of throw within and outside the function. 8
b) List out some exceptions used in C++. 7

Q.9 Explain about formatted and unformatted I/O with suitable examples. 15
End Semester Examination, Dec. 2015  
BCA -Third Semester  
INFORMATION TECHNOLOGY TRENDS (BCA-3002)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1  
Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  
a) Write two applications of artificial intelligence.  
b) What does GPRS stands for?  
c) Define cyber crime.  
d) Write the components of cloud computing.  
e) Give an advantage of telecommunication.  
f) What kind of architecture does mobile computing deploy?  
g) Define data mining.  
h) What feature should smart phones have in coming years?  
i) What was the frequency band in IG?  
j) Compare between digital and analog signals.  

UNIT-I

Q.2  
Compare between the following:  
a) 3G and 4G generation.  
b) Smart phones and tablets.  
c) iOS and android platform.  

5x3

Q.3  
a) How a smart phone is better than traditional phone? Justify your answer.  
b) Define communication technology. What is the most commonly used mobile platform in communication? Explain its features.  

UNIT-II

Q.4  
a) What is the benefit of cloud computing?  
b) Write short notes on:  
i) Iaas  
ii) Saas  

5x2

Q.5  
a) Explain the business benefits of cloud computing.  
b) Describe the service models of cloud computing.  

UNIT-III

Q.6  
a) What is cyber crime? Explain the classifications of cyber crime.  
b) How can we protect ourself from online frauds? Describe in detail.  

Q.7  
What is computer networks intrusion? How can we protect ourself from network intrusion?  

UNIT-IV

Q.8  
What is artificial intelligence? Write the characteristics of artificial intelligence and areas where it is used.
Q.9 Define data mining. Compare data mining with data warehousing. Explain the role of data mining in the field of education.
End Semester Examination, Dec. 2015  
BCA - Third Semester  
NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES  
(BCA-3003)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  **Multiple choice questions:**

a) An example of transcendental equation is:
   i) $x^3 - 2x - 10 = 0$
   ii) $x^3 e^x = 5$
   iii) $x^2 + 11x - 1 = 0$
   iv) None of the above.

b) Explain the difference between interpolation and extrapolation.

c) Construct forward difference table for the following values of X and Y.

<table>
<thead>
<tr>
<th>X</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>6</td>
<td>10</td>
<td>13</td>
<td>17</td>
<td>23</td>
<td>21</td>
</tr>
</tbody>
</table>

d) The root of the equation $x^3 - 2x - 5 = 0$ lies between:
   i) 0 & 1
   ii) 1 & 2
   iii) 2 & 3
   iv) 3 & 4

e) From the following data of wages of 7 workers compute the median wage:
   Wage: 4600, 4650, 4580, 4690, 4660, 4606, 4640.

f) If mean of binomial distribution is 40 and standard deviation is 6. Calculate n, p and q.

g) The height of normal curve is maximum at mean. **(TRUE / FALSE)**

h) __________, __________, __________ are measures of central tendency.

i) What is positive and negative correlation?

j) The average weekly wage for a group of 25 persons working in a factory was calculated to be Rs. 378.40/- . It was later discovered that one figure was misread as Rs.160/- instead of the correct value Rs. 200/- . Calculate the correct wage.

---

**UNIT-1**

Q.2  a) Find the roots of equation $x^3 - 3x + 1$ by using Newton’s Raphshon method.  **8**

b) Evaluate $\int_{0}^{4} e^x dx$ by

   i) Trapezoidal rule.
   ii) Simpson’s $\frac{1}{3}$ rule.
   iii) Simpson’s $\frac{3}{8}$ rule

   and compare it with the actual value.  **7**

Q.3  a) Apply R-K method of 4th order find $y(0.2)$ for the equation \( \frac{dy}{dx} = \frac{y - x}{y + x}, y(0) = 1 \).

   Take $h = 0.2$.  **8**

b) Evaluate $y(0.1)$ by Taylor’s series method if $y(x)$ satisfies $y' = xy + 1, y(0) = 1$.  **7**
UNIT-II

Q.4  a) Describe method of least square to fit a straight line. Use this method to fit a straight for the following data:

<table>
<thead>
<tr>
<th>$x$:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$:</td>
<td>14</td>
<td>27</td>
<td>40</td>
<td>55</td>
<td>68</td>
</tr>
</tbody>
</table>

b) Assuming that the following values of $y$ belongs to a polynomial of degree 4, compute the next three values:

<table>
<thead>
<tr>
<th>$x$:</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$:</td>
<td>1</td>
<td>-1</td>
<td>1</td>
<td>-1</td>
<td>1</td>
<td>-1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Q.5  a) Contract Newton’s forward interpolation polynomial for the following data:

<table>
<thead>
<tr>
<th>$x$:</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>$y$:</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>16</td>
</tr>
</tbody>
</table>

And hence evaluate $y$ for $X=5$.

b) Use Lagrange’s formula to find the value of $f(1)$ from the given data:

<table>
<thead>
<tr>
<th>$x$:</th>
<th>0</th>
<th>2</th>
<th>3</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x)$:</td>
<td>648</td>
<td>704</td>
<td>729</td>
<td>792</td>
</tr>
</tbody>
</table>

UNIT-III

Q.6  a) Calculate mean, median, mode for the distribution of weights of 150 students from the data given below:

<table>
<thead>
<tr>
<th>Weights (in kg):</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-80</th>
<th>80-90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency:</td>
<td>18</td>
<td>37</td>
<td>45</td>
<td>27</td>
<td>15</td>
<td>8</td>
</tr>
</tbody>
</table>

b) Eight coins are thrown simultaneously. Using binomial distribution show that the probability of obtaining aleast 6 head is 0.1445.

Q.7  a) In a town 10 accidents took place in a span of 50 days. Assuming that the number of accidents per day follows poisson distribution, find the probability that there will be three or more accidents per day.

b) Find the coefficient of correlation between the sales and expenses from the data given below:

<table>
<thead>
<tr>
<th>Firm:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales [in Lakh]:</td>
<td>50</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>60</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Expenses:</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

UNIT-IV

Q.8  Describe the various method of sampling and the requisite of a good sample.

Q.9  What is hypothesis? Discuss the various test of hypothesis for the cases when the size of sample is large.
End Semester Examination, Dec. 2015
BCA -Third Semester
SOFTWARE ENGINEERING (BCA-3004)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) The first step in software development life cycle (SDLC) is:
   i) Investigation and analysis
   ii) System design
   iii) System testing
   iv) Coding
b) Black box testing sometimes called:
   i) Data flow testing
   ii) Loop testing
   iii) Behavioral testing
   iv) Graph based testing
c) Function oriented metrics were first proposed by:
   i) John
   ii) Gaffney
   iii) Albercht
   iv) Basili
d) Which of the following is not a desirable characteristics of SRS?
   i) Concise
   ii) Ambiguous
   iii) Tracable
   iv) Verifiable
e) An important aspect of coding is:
   i) Readibility.
   ii) Productivity.
   iii) To use as small memory space as possible.
   iv) Brevity.
f) Which of these does not account for software failure?
   i) Increasing demand.
   ii) Low expectation.
   iii) Increasing supply.
   iv) Less reliable and expensive.
g) In object oriented design of software, objects have:
   i) Attributes and names only
   ii) Operations and names only
   iii) Attributes, name and operation
   iv) None of the above.
h) Who writes the software requirement specification (SRS) document?
   i) System developer.
   ii) System tester.
   iii) System analyst.
   iv) None of the above.
i) Products that are handed over to the client at the end of the project are called ____________.
j) ____________ represent the completion of important stages of the project.

UNIT-I

Q.2 How requirement engineering is helpful in discovering the purpose of system for which it is intended? Explain requirement engineering process in detail. 15

Q.3 Differentiate between waterfall model and spiral model. Explain spiral model in detail. 15

UNIT-II

Q.4 What are the various techniques for the estimation of resources, cost and schedule of software development? Explain COCOMO model in detail. 15

Q.5 a) What are the advantages of using GANTT chart? 5
b) Differentiate between data structure metrics and information flow metrics. 10

**UNIT-III**

Q.6  
  a) What are the goals of test case planning?  
  b) What is website testing? 
  c) What are the rules of defining formal bug? 5x3

Q.7  
  a) Explain black box testing with a diagram. 10 
  b) Explain gray box testing in brief.

**UNIT-IV**

Q.8  
  a) Explain capability maturity model (CMM) in detail. 10 
  b) Explain fault based testing in brief. 5

Q.9  
  a) What is the need of testing? 5 
  b) Explain cause effect graphing technique in detail. 10
Q.1 Write about any two of the following topic (approx 250 words)
   a) Time management matrix.
   b) Five components of emotional intelligence (EI).
   c) Bottles and funnel concept of sells. 5x2

PART-A

Q.2 What is SMART goal setting? What are short term and long term goals? 10
Q.3 Describe a problem and the way you collect information and establish a problem solving model. 10
Q.4 What is the biggest threat to time management and how do you overcome it? 10

PART-B

Q.5 Imagine that you were leading an under-performing team that was reluctant to take necessary risks to be more successful. What steps would you take to “jump start” the performance of this team? Answer the interview question in your own words. 10
Q.6 “Culture is a group which shapes a person’s values and identity. Cultural identities can stem from the following differences: race, ethnicity, gender, class, religion, country of origin, and geographic region.” Explain the statement in your own words. 10
Q.7 It is the year end and there is a big backlog of work of everyone. One of your co-workers informs you that he or she plans to take the week off, while claiming sick leave. How would you counter the situation? Answer the interview question in your own words. 10
Q.1 Write short notes on (any two):
   a) Skimming and scanning.
   b) Active listening.
   c) Non-verbal communication.

**PART-A**

Q.2 Discuss various points that you will keep in mind while addressing a cross-cultural audience.
   10

Q.3 Discuss various qualities of a good professional.
   10

Q.4 Differentiate between intensive and extensive listening. What are the other different types of listening?
   10

**PART-B**

Q.5 How to prepare for an effective presentation delivery? Discuss how should one prepare for a presentation.
   10

Q.6 Write a paragraph on (any two):
   a) Time management.
   b) Increasing uses of mobile phones.
   c) Physical fitness.
   5x2

Q.7 What are the different barriers to effective communication?
   10
Q.1  
a) What are the advantages of CD-R?  
b) Explain anti-aliasing.  
c) Explain multimedia synchronization.  
d) How the problem of differing sample rate is solved?  
e) Explain intelligent multimedia system.  
f) Explain vector drawing.  
g) Explain cell animation.  
h) Define virtual reality.  
i) What are the challenges faced by multimedia system?  
j) How multimedia presentation devices used in business era?  

Q.2  
a) What are the layers used in ATM? Explain any two.  
b) Explain different types of multimedia devices.  

Q.3  
What are the different file formats used in multimedia? Which file format is used widely for advertising? Justify your answer.  

Q.4  
a) Draw a neat block diagram of intelligent multimedia system and explain purpose of each component.  
b) What are the applications of virtual reality?  

Q.5  
Write short notes on:  
a) Time domain sampled representation.  
b) Sampling rate.  
c) MIDI.  
d) Quantization error.  

Q.6  
a) What is speech compression and speech synthesis?  
b) What are the principles of MPEG?  

Q.7  
What are the principles of animation? Compare different types of animation in multimedia.
End Semester Examination, Dec. 2015
B.Sc. (Information Technology). – Third Semester
PERSONALITY DEVELOPMENT-III (IT-302)

Time: 3 hrs  Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Write short notes on (any two):
   a) First impression.
   b) Non-verbal communication.
   c) Coachability.
   5x2

   PART-A

Q.2 What are the qualities of a good professional?  
   10

Q.3 What is active listening? What are the benefits of active listening?
   10

Q.4 a) Imagine a scenario that you and Mr. A are colleagues in a finance department of a company. Mr. A is on a leave and you receive a call from one of his client. Write down the dialogues of the conversation that will follow.
   6
   b) How will you prepare yourself for a call scheduled with your boss?
   4

   PART-B

Q.5 Discuss the Do’s and Don’ts of drafting an e-mail.
   10

Q.6 What is goal setting? Why is it important to set goals? How do you go about achieving your goals?
   10

Q.7 What is communication? Briefly explain its process. Why is communication important in our lives?
   10
Q.1  
a) Differentiate between LAN and WAN.  
b) Define star topology.  
c) Explain point to point and multipoint line configuration.  
d) What is frame relay?  
e) Explain physical layer interface X.21.  
f) Define the term token bus.  
g) Compare CSMA with CSMA/CD.  
h) Explain virtual LAN.  
i) What is secret key cryptography?  
j) What do you mean by authentication?  

PART-A

Q.2  
a) Explain simplex, half duplex and full duplex communication with suitable examples.  
b) Compare serial and parallel transmission. Discuss the advantages and disadvantages of each.  

Q.3  
a) Explain about various transmission media with examples.  
b) What are different types of encoding techniques? Explain with an example.  

Q.4  
a) What is multiplexing? Explain its different types with examples.  
b) Differentiate between circuit switching and packet switching.  
c) Explain run length encoding for data compression with an example.  

PART-B

Q.5  
a) Explain ARP and RARP internet control protocols.  
b) What are the message types used by ICMP. Explain in detail with an example.  
c) Differentiate between token bus and token ring.  

Q.6  
a) Explain ATM reference model in detail.  
b) Write a short note on DQDB.  

Q.7  
Write short notes on:  
a) Proxy servers.  
b) Quality of service.  
c) Remote monitoring technique.
End Semester Examination, Dec. 2015
B. Tech. – Fourth Semester
JAVA PROGRAMMING (IT-402)

Time: 3 hrs  Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 a) Write the syntax for applet tag.
b) Explain finally block.
c) Discuss the process of garbage collection in java?
d) How class variables are declared?
e) What is polymorphism?
f) Write the syntax for creating an arc in java.
g) Define exception.
h) Explain ternary operation.
i) Which listener interface is added to TextArea object?
j) How will you display the string “Hello world” on applet coordinate 100,200?  2x10

PART-A

Q.2 a) Write a java program to add two matrices. 10
b) Explain control statements in java with suitable example. 10

Q.3 a) Briefly explain the purpose and benefits of creating jar files. 10
b) What is exception handling? Explain the process of handling exception by taking suitable example. 10

Q.4 a) Create an applet that receives a number through TextField and prints the sum of its digits in other TextField when submit button in pressed.

    Enter a no.:   
    Sum of digits:  
    Submit

b) Explain the following functions: drawOval(), SetMenuBar(), getKeyChar(), getAction Command(), setLayout() 10

PART-B

Q.5 Write short notes on:
a) Marshalling and unmarshalling
b) SOAP
c) IDL
d) Stub and skeleton  5x4

Q.6 a) Explain the process of creating threads using runnable interface with the help of an example. 10
b) Write a program to copy contents of one file to another file. 10
Q.7  a) Write a program to insert records into employee table using prepared statement.  
   b) Write about: Transactions and metadata
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Fourth Semester
PERSONALITY DEVELOPMENT-IV (IT-403)

Time: 3 hrs  
Max Marks: 50
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on any two of the following:
   a) Managing one zone emotions.
   b) Distinguish between volume and tone.
   c) Pre-cau analysis. 

   5x2

   PART-A

Q.2 IBM is coming to your campus for recruitments. Design your resume and covering letter to meet the requirement of the job for a “Management Trainee”.

10

Q.3 What is time management? What is time management matrix and also discuss its various parameters in detail?

10

Q.4 What is body language? Explain the importance of gestures and posture while appearing for a job interview.

10

   PART-B

Q.5 Explain in detail the sales process? What is post call analysis?

10

Q.6 Discuss in details the types of group discussion? How does one handle criticism while sitting in a group discussion?

10

Q.7 What is a customer engagement plan? Explain with the help of a suitable example.

10
End Semester Examination, Dec. 2015  
B. Tech. – Fifth Semester  
INTERNET AND WEB TECHNOLOGY (IT-501)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  
a) With the help of a neat diagram, show the layers in a network at which the connecting devices operate.  
b) Write syntax in HTML for drawing a horizontal line on a web page at its centre with width=10 pixels.  
c) What are plug-ins?  
d) State difference between cell-spacing and cell-padding, using an example.  
e) State purpose of Cascade style sheets (CSS).  
f) State advantages of JavaScript.  
g) Write JavaScript code taking “name” as input and displaying “Welcome name” as its output.  
h) State basic concept behind JavaScript document object model (DOM).  
i) List names of server-side technologies used. Explain briefly functions of any two technologies.  
j) State purpose of using firewalls for internet.

PART-A

Q.2  
a) Explain working of TCP/IP protocol suite.  
b) State working if a “bridge” using a diagram.  
c) Write a short note on Personal Web Server (PWS).

Q.3  
a) Describe in detail the functioning of web browser. Support your answer with a neat diagram.  
b) Define a search engine. Explain architecture of a search engine.

Q.4  
a) Write HTML code for following table. Position the table at centre of web page with heading.

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Subject Name</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramesh</td>
<td>WTCS</td>
<td>35</td>
</tr>
<tr>
<td>Ganesh</td>
<td>WTCS</td>
<td>45</td>
</tr>
</tbody>
</table>

b) Write HTML code for following as ordered and unordered list. Ordered list to begin from 3.  
List is:  
Bread  
Butter  
Jam  
c) State necessity of frame in HTML. Write HTML code to divide web page horizontally in the ratio of 40 and 60. Show output.
PART B

Q.5  a) Write a JavaScript code for validation of username and password against hard coded values. Display appropriate messages under all possible conditions. Show output.  
     b) How events are handled in JavaScript? Explain two examples.  
     c) Write a short note on “cookies”.  

Q.6  a) Describe CGI architecture using diagram. State languages supported by CGI. What are basic applications of CGI?  
     b) State advantages of Java servlets.  
     c) Explain features of Java server pages (JSP).  

Q.7  a) What is a “firewall”. Discuss proxy firewall with a diagram.  
     b) Explain the concept and working of digital signature with an example.
Q.1 Write short notes on (any two):
   a) Best first search algorithm.
   b) Semantic networks.
   c) Knowledge acquisition.  

**PART-A**

Q.2 How would you define ‘intelligence’? Do you think that computers or machines are as intelligent as humans? Justify your answer.  

Q.3 Express the following sentences involving predicates in symbolic form:
   a) All students are clever.
   b) Some students are not successful.
   c) Every clever student is successful.
   d) There are some successful students who are not clever.
   e) Some students are clever and successful.  

Q.4 Explain MiniMax search procedure with suitable examples.  

**PART-B**

Q.5 Explain the term ‘Reasoning.’ Compare and contrast between forward and backward reasoning.  

Q.6 Explain the concept of expert systems in artificial intelligence with suitable examples. Write their characteristics too.  

Q.7 Explain the concept of:
   a) Back tracking.
   b) Probabilistic reasoning.  

5x2
End Semester Examination, Dec. 2015  
B. Sc. (Information Technology) - Fifth Semester  
VISUAL BASIC PROGRAMMING (IT-515)

Time: 3 hrs  
Max Marks: 50  
No. of pages: 1

Note: Attempt Five questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 a) Give two advantages of using Visual Basic.  
b) How to declare an array in Visual Basic? Give an example.  
c) Give two properties of label control.  
d) Explain the purpose of exit statement.  
e) Give two date functions available in Visual Basic.  
5x2

PART-A

Q.2 Explain the following terms:  
a) Properties window.  
b) ToolBox.  
5  
5

Q.3 a) What do you mean by a scope of a variable?  
b) Explain the difference between local and static variable using an example.  
5  
5

Q.4 Explain all the loop statements available in Visual Basic.  
10

PART-B

Q.5 Write short notes on:  
a) ListBox.  
b) CheckBox.  
5  
5

Q.6 Explain the following terms:  
a) Data control.  
b) Data grid control.  
5  
5

Q.7 Explain all the features of data report in Visual Basic.  
10
Q.1  a) Compare classful and classless addressing schemes.  
    b) Explain the role of Ipconfig and finger troubleshooting commands.  
    c) Explain the need of ICMP protocol, while IP is already available at network layer of TCP/IP protocol suite.
    d) List various issues in server software design.  
    e) Name the various system calls of UDP server.  
    f) Define TLI.  
    g) Explain the role of a multiservice server.  
    h) Compare between a remote procedure call and a local procedure call.  
    i) Describe ‘PPP’ in brief.  
    j) How network security is planned?  

Q.2  a) A block of addresses is granted to a midsize organization. We know that one of the addresses from a block is 184.44.82.16/26. Answer the following:
    i) What is the value of mask in the given IP address?  
    ii) Write the default mask of the associated class.  
    iii) Find first address of the block.  
    iv) Find last address of the block.  
    v) Find total number of addresses in the block.  

Q.3  a) What is the role of sockets in network communication? Explain role and syntax of each system call involved in TCP based, client-server communication with a neat interaction diagram.
    b) What is the purpose of socket options? Name the functions used to get and set socket options.
    c) Explain the role of select() and poll() functions in socket programming.

Q.4  a) Compare iterative connection oriented and iterative connectionless servers. Explain the iterative connection oriented server algorithm with a neat process structure diagram.
    b) What do you mean by multiprotocol server? What is the motivation behind multiprotocol servers? Explain its working with process structure.
    c) Explain the concept of NFS.
Q.5  a) What is the role of RPC port mapper? Explain the complete process of dynamic port mapping with RPC port mapper algorithm.  
     b) Define remote programs and procedure. Explain the concept of mutual exclusion communication semantics.  
     c) Explain the concept of RPC retransmission strategy in detail.  

Q.6  a) What is the role of a DNS? List out steps for configuring a DNS server.  
     b) What do you mean by Network administration?  
     c) Define routing. Compare static and dynamic routing.  

Q.7  a) Define network security. List the different types of threats and measures taken to counter them.  
     b) What are wrappers? How it differs from firewalls.  
     c) How can you prevent password sniffing? State ways to make your password secure.
End Semester Examination, Dec. 2015  
B. Tech. – Fifth / Sixth /Seventh Semester  
SOFTWARE ENGINEERING (IT-702)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  
a) Explain the purpose of function point.  
b) Explain the difference between data flow diagrams and flow chart.  
c) What are the advantages of prototype model?  
d) Explain the term 'Risk management'.  
e) What do you understand by cardinality?  
f) Differentiate between alpha testing and beta testing.  
g) What is stress testing?  
h) What are the characteristics of a good SRS?  
i) What is structural partitioning?  
j) Explain abstraction in terms of system design.  

PART-A

Q.2  
a) Explain spiral model in detail with its advantages and disadvantages.  
b) What is the difference between incremental and evolutionary model?  

Q.3  
a) Draw an entity relationship diagram for online airline reservation system.  
b) Differentiate between functional and non-functional requirements with example.  
c) Discuss the significance and use of requirement engineering.  

Q.4  
a) Explain the cocomo model in detail.  
b) What are the different types of risks associated with software development? How do we manage them?  

PART-B

Q.5  
a) Define coupling. Explain different types of coupling.  
b) What document should be produced on completion of design phase?  
c) Explain control hierarchy.  

Q.6  
a) Write short notes on:  
   i) Unit testing  
   ii) Integration testing  
   iii) Performance testing  
   iv) Recovery testing  
   v) System testing  

b) Discuss the difference between verification and validation.  
c) Will exhaustive testing guarantee that the program is 100% correct? Justify your answer  

Q.7  
a) What is software reliability? What are the measurements of reliability?  
b) What is the difference between quality control and quality assurance?  
c) What are the building blocks of CASE?
Q.1  a) What do you understand by modularity?
    b) What are styles in terms of unit testing?
    c) Explain formal technical reviews.
    d) What is the difference between a throw away prototyping and an evolutionary prototype?
    e) List the principles of a software design.
    f) What are the advantages of RAD model?
    g) What is staffing level estimation?
    h) Explain control flow model.
    i) What do you understand by software reliability?
    j) What is the difference between quality control and quality assurance?

2x10

PART-A

Q.2  a) Explain RAD model with all its advantages and disadvantages.
     10
    b) What are the characteristics of software?
     5
    c) What is the difference between software and hardware product?
     5

Q.3  a) What is SRS? What are the characteristics of a good SRS?
     10
    b) Draw an ER diagram for a hotel reception desk management.
     10

Q.4  a) Explain the purpose of project scheduling.
     5
    b) Explain the empirical estimation techniques.
     7
    c) What is cyclometric complexity? Explain methods to calculate cyclomatic complexity.
     8

PART-B

Q.5  a) What is cohesion? Explain the different types of cohesion in detail.
     10
    b) Write short notes on following:
       i) Refinement.
       ii) Structural partitioning.
       iii) Design documentation.
       iv) Abstraction.
v) Central hierarchy.  

2x5

Q.6  
a) What is meant by test case design? Discuss its objectives in brief.  
5  
b) What is the difference between a white and a black box testing? Is determining  
test cases easier in black or white box testing? It is correct to claim that if white  
box testing is done properly, it will achieve close to 100% path coverage? Explain.  
10  
c) What is the purpose of system testing? How is it done?  
5

Q.7  
a) Explain in detail statistical software quality assurance in brief.  
5  
b) Explain the building blocks and architecture of CASE in detail.  
15
End Semester Examination, Dec. 2015
B. Tech. – Seventh / Eighth Semester
MANAGEMENT INFORMATION SYSTEMS (IT-721)

Time: 3 hrs
Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  a) What are the advantages of planning?
     b) Name any two quality parameters of information.
     c) What is the difference between data processing and information processing?
     d) Define system control.
     e) Define data warehouse.
     f) What is the source of knowledge in an organization?
     g) Define strategic planning.
     h) What is the difference between recurring and non-recurring information?
     i) Give reasons why it is necessary to have MIS as software.
     j) Define decision support system.

2x10

PART-A

Q.2  a) What is role of MIS in an organization?
     10
     b) Explain the functional models related to MIS. Discuss their characteristics.
        10

Q.3  a) Distinguish between the production sector and service sector in terms of character focus and deliverable.
     10
     b) Write a short note on role of DBMS in MIS.
     10

Q.4  a) Explain the different methods of data and information collection.
     10
     b) "Quality of information improves the knowledge and decision making capability. Justify your answer.
     10

PART-B

Q.5  a) Compare the prototyping and life cycle approach for the development of MIS.
     10
     b) Explain the steps required for the design of modules and layouts for the development of MIS.
     10
Q.6  a) What is the purpose of decision support system in MIS? Explain the types of decision support systems.  
     10  
     b) Explain any two models of decision support system with an example.  
     10  

Q.7  a) Illustrate the application of MIS for production sector with an example.  
     10  
     b) What is the difference between product management and service management?  
     4  
     c) List the various activities of service sector in MIS.  
     6
End Semester Examination, Dec. 2015
B. Tech. – Sixth / Seventh Semester
E-COMMERCE AND ERP (IT-722)

Time: 3 hrs
Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  a) Describe the risk associated with e-commerce.
   b) Explain the application of EDI.
   c) Explain e-payment with an example.
   d) Explain importance of SSL in e-commerce.
   e) Explain e-cash trail.
   f) Define digital signature.
   g) How e-client and e-cash differs?
   h) Write advantages of on-line selling.
   i) Define e-commerce.
   j) What are advantages of ERP?

PART-A

Q.2  a) Explain four C’s of e-commerce.
   b) Explain briefly different business model of e-commerce.

Q.3  a) Explain smart card data encryption. Explain and compare DES and RSA.
   b) Explain cyber cash model in detail

Q.4  a) Explain EDI model and its protocols.
   b) Write short notes on any two:
      i) Firewall      ii) cryptography      iii) Key management

PART-B

Q.5  a) What is the importance of ERP in business era?
   b) Explain supply chain management in detail.
   c) Write advantages and disadvantages of ERP.

Q.6  a) Explain briefly different modules of ERP.
   b) Compare production planning and production scheduling.
   c) Write short note on resource management.

Q.7  a) Explain ERP life cycle model.
   b) Explain implementation of an ERP system.
End Semester Examination, Dec. 2015
B. Tech. – Sixth / Seventh / Eighth Semester
ADVANCED JAVA PROGRAMMING (IT-801)

Time: 3 hrs
Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 a) Describe prepared statement. How do you create instances of prepared statement? How do you set parameter values in a prepared statement?
b) How do you add and remove a node from tree (J Tree class).
c) What are the differences between a server socket and a client socket?
d) Explain Java authentication and authorization service (JAAS) in detail.

5x4

PART-A

Q.2 a) Describe the following interfaces: driver, connection, statement and resultset.

8
b) Write a Java application that views, inserts and updates course information stored in a database.

7
c) What are the advantages of developing database applications using Java?

5

Q.3 a) Write a Java application to implement J List and progress indicator.

10
b) How styled components are implemented in Java? Also explain the usage of tables with suitable programs.

10

Q.4 a) Discuss with example how a client application read a file from server through URL connection class.

10
b) Explain the following terms with syntax:
   i) Socket timeout
   ii) Half close

10

PART-B

Q.5 a) Explain transparency, composition and clipboard.

10
b) What are AWT components? How an image manipulation is accomplished using AWT components.

10
Q.6  a) What is a Java Beans component? Is every GUI class a Java Beans component? Is every GUI user interface component a Java Beans component? Is it true that a Java Beans component must be a GUI user interface component?

b) Describe the naming conventions for accessor and mutator methods in a Java Beans component.

Q.7  Write short note on:
   a) Class loaders.
   b) Encryption and decryption.
   c) Digital signature.
   d) Message digest.
End Semester Examination, Dec. 2015
B. Tech. – Seventh / Eighth Semester
SOFTWARE PROJECT MANAGEMENT (IT-821)

Time: 3 hrs                                              Max Marks: 100
No. of pages: 1

Note: Attempt **FIVE** questions in all; **Q.1 is compulsory**. Attempt any **TWO** questions from **Part A** and **TWO** questions from **Part B**. Each question carries equal marks.

Q.1
a) Difference between standard process and customized process.  
b) Write the equation for effort and development time in basic COCOMO model.  
c) Why SDLC is important?  
d) What is test plan?  
e) What is top-down technique for effort estimation?  
f) Explain the concept of quality in software project management.  
g) What is defect prevention planning?  
h) Explain flexibility matrix.  
i) What is review plan?  
j) What is critical change management?

2x10

**PART-A**

Q.2
a) Describe the life cycle of SPM in detail.  
10
b) Explain the KPAS at various levels in a capability maturity model.  
10

Q.3
a) Explain the difference between spiral model and waterfall model.  
10
b) Describe the process of software testing plan.  
10

Q.4
a) Explain PERT chart with the help of an example.  
10
b) Explain the effort estimation process of COCOMO model.  
10

**PART-B**

Q.5
a) What is quality management planning? Also explain quality assurance.  
10
b) What is risk management? Also explain risk assessment.  
10

Q.6
a) What is project tracking? Explain it with the help of suitable status report.  
10
b) What is milestone analysis? Explain it with suitable example.  
10
Q.7  

a) Explain process flow chart, perato chart and run chart for quality control. 

b) What is process review? Explain project closer analysis and reports.
End Semester Examination, Dec. 2015
B. Tech. – Seventh Semester
SOFTWARE PROJECT MANAGEMENT (IT-821)

Time: 3 hrs
Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 a) What is SDLC?
   b) Why is effort scheduling required?
   c) What are project management skills? Give an example.
   d) What is the importance of SRS document?
   e) What is process planning?
   f) Define risk exposure.
   g) Why do we need project crashing?
   h) How is scope management performed?
   i) Why is defect prevention required?
   j) What do you mean by quality assurance?

\[2 \times 10\]

**PART-A**

Q.2 a) What do you understand by software development? Explain.
   \[8\]
   b) Why is customization required in the standard software development process?
      Explain various types of customization process followed.
   \[12\]

Q.3 a) Discuss the prototype model and explain the areas of its application.
   \[10\]
   b) Explain the RAD model in detail. Also list its advantages and disadvantages.
   \[10\]

Q.4 a) Discuss various approaches used for effort estimation.
   \[7\]
   b) What is software requirement specification? Why is it required?
   \[5\]
   c) What is scheduling? Explain.
   \[8\]

**PART-B**

Q.5 a) What are various approaches used for quality management? Explain the difference between them.
   \[10\]
   b) What is risk management? Explain various technology used. Also explain why we need to optimize the risks?
   \[10\]
Q.6  
  a) What is project tracking? What are its components?  
      10 
  b) What is project crashing? How is it different from fast tracking approach?  
      10 

Q.7  
  Write short notes on: 
  a) Project review process. 
  b) Critical change management. 
  c) Defect analysis and prevention. 
  d) Project closure analysis and report.  
      5x4
End Semester Examination, Dec. 2015  
B. Tech. – Seventh / Eighth Semester  
DATA WAREHOUSING AND DATA MINING (IT-822)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  
a) Describe multi-dimensional data model.  
b) What is the role of Meta data in data warehouse?  
c) Explain roll-up and drill-down operations.  
d) List the advantages of ROLAP over OLAP.  
e) What do you understand by correlation analysis?  
f) Define base and apex cuboids.  
g) Why do we need to preprocess the data?  
h) What is bit-map indexing?  
i) What do you understand by time-series data?  
j) What is frequent item set?  

2x10

PART-A

Q.2  
a) Explain and compare fact constellation, star and snowflake schemas in detail. 10  
b) What are the data warehouse measures? Explain their categorization and computation. 10

Q.3  
a) Discuss data warehouse models from the architecture point of view. 6  
b) State the responsibilities of data warehouse manager. 4  
c) How to construct a data warehouse? Explain its construction from architecture point of view. 10

Q.4  
a) Explain data aggregation and transformation processes using suitable examples.10  
b) How to process the OLAP queries efficiently? Explain. 5  
c) Explain data warehouse back-end tools and utilities. 5

PART-B

Q.5  
a) Explain different types of concept hierarchies using suitable examples. 10  
b) How discovered patterns are presented and visualized in data mining? 10

Q.6  
a) Explain classification using decision-tree induction. What is the role of tree-pruning? 10  
b) A database has four transactions. Let minimum support =60% and minimum confidence =80%  

<table>
<thead>
<tr>
<th>TID</th>
<th>Items-bought</th>
</tr>
</thead>
<tbody>
<tr>
<td>T100</td>
<td>{K, A, B, D}</td>
</tr>
<tr>
<td>T200</td>
<td>{D, A, C, E, B}</td>
</tr>
<tr>
<td>T300</td>
<td>{C, A, B, E}</td>
</tr>
<tr>
<td>T400</td>
<td>{B, A, D}</td>
</tr>
</tbody>
</table>

Find all frequent item sets using Apriori algorithm. 10
Q.7  a) What do you understand by mining multi-media databases? Explain similarity search used in multimedia data. 10
b) Explain the process of mining spatial databases. How spatial data cubes can be constructed? 10
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Second Semester
PERSONALITY DEVELOPMENT-II (IT.202)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short notes on (any two):
   a) SWOT.
   b) Greek style of presentation.
   c) Qualities of a leader.

   PART-A

Q.2 Why are interviews conducted? What are the various process related to preparation for an interview? 10

Q.3 What is subjective expected utility model (SEU) in decision making? Discuss the various steps of implementing SEU model. 10

Q.4 What is Harvard style of referencing? Discuss the various types of citing styles of Harvard style. 10

   PART-B

Q.5 Describe how a personality develops. What are the methods for changing a personality? 10

Q.6 "Creativity is more a characteristic of individuals, while innovation is implementation of tends to be accomplished by groups, organization or societies”. Explain the statement in your own words. 10

Q.7 What are the pragmatics of cross-cultural communication? 10

Q.8 What are the 4 P’s to avoid pure terror in a presentation? Discuss the different types of oral presentation in brief. 10
Q.1 Choose the correct option:

a) Which of the following things can have an effect on the development of an individual's personality?
   i) Physical and mental capabilities.
   ii) Health and physical appearance.
   iii) Skin color, gender and sexual orientation.
   iv) All of the above.

b) Our personalities developed as a result of _________.
   i) Genetic inheritance.
   ii) Environment influences.
   iii) Both of the above.

c) ________ is the complex of mental characteristics that makes each of us unique from other people.
   i) Heredity.
   ii) Emotional tone.
   iii) Personality.

d) An individual’s actions are most likely to be strongly controlled by conscience if they have a(n) _____ type of personality.
   i) Inner-directed personality.
   ii) Other-directed personality.
   iii) None of the above.

e) The term ‘sociopath’ or ‘psychopath’ is sometimes used to describe which type of personality disorder.
   i) Histrionic personality disorder.
   ii) Antisocial personality disorder.
   iii) Paranoid personality disorder.
   iv) Schizotypal personality disorder.

f) Which of the following is NOT considered to be a risk factor for personality disorders?
   i) Living in inner cities.
   ii) Low socioeconomic class.
   iii) Gender.
   iv) Being a young adult.

g) The energizing force that activates behaviour and provides purpose and direction to that behaviour is known as _________.
   i) Motivation
   ii) Personality
   iii) Emotion
   iv) Perception

h) Which of the following reflects the relatively stable behavioural tendencies that individual’s display across a variety of situations?
   i) Motivation
   ii) Personality
iii) Emotion  
iv) Perception  
i) An advertisement theme of “do your own thing” is most likely to be based on a need for __________.  
i) Affiliation  
ii) Modeling  
iii) Consistency  
iv) Independence  
v) None of the above  
j) A substantial amount of brand switching when the current brand is satisfactory may be explained by the ________ motive.  
i) Expression  
ii) Reinforcement  
iii) Simulation  
iv) Affiliation  

**PART-A**

Q.2 Explain the importance of time management in the making of the career of a person.  

Q.3 What is emotional intelligence? What are its various components?  

Q.4 How important is customer satisfaction in running a business? What are the different ways by which we manage angry customers?  

**PART-B**

Q.5 a) Design your curriculum vitae for the post of “Director-IT” for an esteemed organisation, depicting an experience of atleast 10 years.  
b) Write the cover letter for the same to the Chairman of the organisation.  

Q.6 Why group discussion are conducted for hiring people? Mention different types of GDs and their importance.  

Q.7 Explain the role of body language, basic etiquettes, dress and appearance during an interview or a presentation.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Fifth Semester
SOFTWARE PROJECT MANAGEMENT (IT.512)

Time: 3 hrs
Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Define following in brief:
   a) Characteristics of a project.
   b) Forward and backward pass.
   c) AON basics.
   d) Multitasking.
   e) Earned value management.

   2x5

PART-A

Q.2 a) What do you understand by life cycle of a project? 4
   b) Explain different phases of project development life cycle of a software. 6

Q.3 Define project planning and scheduling techniques with suitable examples. 10

Q.4 a) What are the various steps for allocation of resource among different projects? 7
   b) Define importance of a project splitting. 3

PART-B

Q.5 What do you understand by a quality? Differentiate between product and process quality. 10

Q.6 Explain the methods of project monitoring in detail. 10

Q.7 Write short notes on:
   a) Project closure/termination. 5x2
   b) Project audit.
End Semester Examination, Dec. 2015
B. Sc. (Information Technology) - Fifth Semester
MULTIMEDIA SYSTEMS (IT.514)

Time: 3 hrs  Max Marks: 50
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. All questions carry equal marks.

Q.1 Write short note on (any two):
   a) Editing and capturing images.
   b) Morphing.
   c) DVI technology.

   PART-A

Q.2 What do you mean by multimedia? Explain in detail the application area’s of multimedia.

Q.3 Differentiate the following (any two):
   a) GIF and TIFF.
   b) Vector drawing and 3-D drawing.
   c) Analog and digital signals.

Q.4 Explain all computer color models and color palettes in detail.

   PART-B

Q.5 Explain the following (any two):
   a) Signal processing.
   b) Audio decompression.
   c) Image compression.

Q.6 What is intelligent multimedia system? How is it different from normal multimedia system? Explain.

Q.7 Discuss the usage of intelligent virtual reality software system. How is it different from ordinary software system? Explain.
End Semester Examination, Dec. 2015
MCA - Fifth Semester
MOBILE AND ADHOC SENSOR NETWORKS (MCA-5005(C))

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) The home and visitor location registers are used in:
   i) NSS
   ii) Radio subsystem
   iii) OMC
   iv) AC

b) GSM stands for:
   i) General system for mobile.
   ii) Global system for mobile.
   iii) Group system for mobile.
   iv) Global system for special mobile.

c) EIR is meant for:
   i) User identification.
   ii) Device identification.
   iii) Protection of user data.
   iv) None of the above.

d) In a _________ communication system, a geographical area is subdivided into small regions where each small region is called a cell.

e) What is transceiver?
   i) It is combination of transmitter and receiver.
   ii) It is another name of transmitter.
   iii) It is another name of receiver.
   iv) It is advance form of transmitter.

f) In wireless adhoc networks:
   i) Access point is not required.
   ii) Access point is must.
   iii) Nodes are not required.
   iv) None of the above.

g) Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?
   i) CDMA
   ii) CSMA/CA
   iii) ALOHA
   iv) None of the above

h) Which of the following does WAP stands for?
   i) Wireless access protocol.
   ii) Web access protocol.
   iii) Web application protocol.
   iv) Wireless application protocol.

i) Which one of the following is not programming model component?
   i) WAP microbrowser.
   ii) HTTP server.

j) What is WML similar to?
   i) HTTP
   ii) HTML
   iii) FTP
   iv) None of the above

UNIT-I

Q.2 Explain the architecture of GSM in detail. What are the possible handovers in GSM?
Q.3  
a) What are the various advantages and disadvantages of mobile computing?  10  
b) Differentiate between FDMA and CDMA.  5  

UNIT-II

Q.4  
Explain the architecture of wireless application protocol in detail.  15  

Q.5  
a) List out various IEEE 802.11 standards with their features.  10  
b) Differentiate between adhoc v/s infrastructure mode in wireless LAN.  5  

UNIT-III

Q.6  
List out the types of attacks in adhoc wireless networks. How is secure routing done on wireless channels?  15  

Q.7  
 Explain the advantages and disadvantages of DSDV routing protocols with suitable examples.  15  

UNIT-IV

Q.8  
Write short notes on:  
a) WIMAX  
b) Hiper LAN  
c) BRAN  

5x3

Q.9  
What are the major goals of mobile IP? Explain the process of tunneling and reverse tunneling in detail.  15
End Semester Examination, Dec. 2015  
MCA - Third Semester  
ENTREPRENEURSHIP DEVELOPMENT (MCA-002(CB))

Time: 3 hrs  
Max Marks: 50  
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

**Q.1** Explain the following briefly:
   a) Why is EDP needed?
   b) Differentiate between proprietorship and partnership.
   c) Scientific management.
   d) Concept of project evaluation.
   e) Purpose of feasibility study.
   f) Technical consultancy.
   g) What should an entrepreneur do to enter a new market?
   h) What is family business?
   i) Describe the broad structure of a project report.
   j) Why is it important for an entrepreneur to take risk? 1x10

**PART-A**

**Q.2** What is entrepreneurship? How can people be motivated to set up their own enterprises? 10

**Q.3** How is a Public Limited company formed? What are its sources of capital? 10

**Q.4** What is break-even analysis? Why is it done? What are its limitations? 10

**PART-B**

**Q.5** Explain how a project is identified and selected. 10

**Q.6** You want to set up a modern restaurant in a busy locality of a medium-sized town. How will you conduct a feasibility study? 10

**Q.7** Give a brief overview of the government policy for the development of small scale industry in India. 10
End Semester Examination, Dec. 2015  
MCA - First Semester  
FUNDAMENTALS OF IT AND PROGRAMMING TECHNOLOGIES  
(MCA-101-CB)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Multiple choice questions:
  a) Which computer has been designed to be as compact as possible?
     i) Mini computer  
     ii) Super computer  
     iii) Micro computer  
     iv) Mainframe computer  
  b) The amount of data that a disk may contain is called.
     i) Volume  
     ii) Size  
     iii) Storage capacity  
     iv) Primary storage  
  c) ROM and RAM are secondary storage units.
     i) True  
     ii) False  
     iii) Both  
     iv) None of the above.
  d) A computer program that converts assembly language to machine language.
     i) Compiler  
     ii) Interpreter  
     iii) Assembler  
     iv) Comparator  
  e) What does a light pen contain?
     i) Refillable ink  
     ii) Pencil lead  
     iii) Diodes  
     iv) Light sensitive elements
  f) A dot-matrix is a type of:
     i) Printer  
     ii) Scanner  
     iii) Tape  
     iv) Disk  
  g) Which of the following form a decision table?
     i) Action stub  
     ii) Condition stub  
     iii) Both of above  
     iv) None of the above
  h) Optical mark reader is an input device that can be used for making a:
     i) Question paper  
     ii) Answers  
     iii) Multiple choice answers  
     iv) None of the above
  i) A byte consists of
     i) One bit  
     ii) Four bit  
     iii) Eight bit  
     iv) Sixteen bit
  j) What type of computer chips are said to be volatile?
     i) RAM  
     ii) ROM  
     iii) DRAM  
     iv) SRAM

PART-A

Q.2  
  a) Explain the difference between volatile and non-volatile memory. Give an example of each type of memory.  
    7
  b) Differentiate between PROM and EPROM.  
    5
  c) What is a cache memory? How is it different from a primary memory?  
    8
Q.3  a) Explain the differences between:
   i) Printers and plotters.  
   ii) Impact and non impact printers. 
   b) Write the applications of computers in:
   i) Medical science 
   ii) Transport. 

Q.4  a) What is a software? How is a software helpful to user? What are the various types of software? Differentiate between freeware and shareware. 
 b) What are utility software? 
 c) Explain any two language translators in brief. 

Q.5  a) Which technique is popularly known as modular approach of programming? Explain its concept and its type with suitable examples. Also mention its advantages and disadvantages. 
 b) Explain various characteristics of a good program in detail. 

Q.6  Write an algorithm and also draw a flowchart to print the factorial of a number entered by the user. Also perform the dry run to illustrate the flow and the results. 

Q.7  a) Why is proper documentation necessary for a program? 
 b) What are the different types of error? Explain. 
 c) What is debugging? What are its characteristics? Explain the steps to debug a program.
End Semester Examination, Dec. 2015
MCA - First Semester
DISCRETE STRUCTURES (MCA-102)

Time: 3 hrs
Max Marks: 75
No. of pages: 3

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  
(a) State addition principle for sets.
(b) Draw Hasse diagram of \( D_{30} \).
(c) Name the sequence defined by the recurrence relation 
   \[ f_0 = 1, \quad f_1 = 1, \quad f_n = f_{n-1} + f_{n-2}. \]
(d) Write down the contrapositive of the statement \( p \rightarrow q \).
(e) Let \( H \) be a normal subgroup of a group \( G \). Show that the mapping \( f : G \rightarrow G/H \)
   defined by \( f(x) = xH, \quad x \in G \) is a group homorphism.
(f) Define a lattice.
(g) Show that \( D_{20} \) is not a Boolean algebra.
(h) Which of the following is not a bipartite graph?

![Graphs](i) (ii) (iii)

(i) Draw all spanning trees for the graph shown below:

![Graph](iv)

(j) Define a grammar.

UNIT-I

Q.2  
(a) If 25 journals in a library contain a total of 52042 pages, show that one of them must contain at least 2082 pages.
(b) Find the total solution of the difference equation \( a_n + 5a_{n-1} + 4a_{n-2} = 56 \) (3º).

Q.3  
(a) Show that the following argument is valid:

\[ \rho \Rightarrow q \\
q \Rightarrow r \\
\therefore \rho \Rightarrow r \]

(b) Show that the set of all rational number is countable.
UNIT-II

Q.4  a) Let $G$ be a group. If $a, b \in G$, show that $(ab)^{-1} = b^{-1}a^{-1}$.  

b) Define complemented and distributive lattices. Show that $D_{30}$ is complemented.

Q.5  a) Express $x_1 + x_2$ in its complete sum-of-products form is three variables $x_1, x_2, x_3$.

b) Using Karnaugh map find the prime implicants and a minimal sum of product form for $xyz + x\overline{yz} + xy'z + x'y\overline{z} + x'yz + x'y'z$.

UNIT-III

Q.6  a) Show that the graph, shown below, is not Hamiltonion.

b) Define chromatic number of a graph. Find odd-order wheel graph $W_{2m+1}$, $m \geq 1$.

Q.7  a) Using prime algorithm, find the minimal spanning tree of the graph.

b) Evaluate the polish form: $x - 64 + 5 \div 22$.

c) Find a maximal flow in the network below:

UNIT-IV

Q.8  a) Describe a finite state machine which can perform binary addition.

b) Show that the string 01001 is acceptable to the NDFSA having transition table.
<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S$</td>
<td>$s_0$</td>
<td>${s_0, s_3}$</td>
<td>${s_0, s_1}$</td>
</tr>
<tr>
<td></td>
<td>$s_1$</td>
<td>$\phi$</td>
<td>${s_2}$</td>
</tr>
<tr>
<td></td>
<td>$s_2$</td>
<td>${s_2}$</td>
<td>${s_2}$</td>
</tr>
<tr>
<td></td>
<td>$s_3$</td>
<td>${s_4}$</td>
<td>${\phi}$</td>
</tr>
<tr>
<td></td>
<td>$s_4$</td>
<td>${s_4}$</td>
<td>${s_4}$</td>
</tr>
</tbody>
</table>

Q.9  

a) Find the language accepted by automation M shown in the transition diagram below:

![Transition Diagram](image)

b) Find the language $L(G)$ over $\{a, b\}$ generated by the grammar with productions.

$\sigma \rightarrow b\sigma, \sigma \rightarrow aA, A \rightarrow bA, A \rightarrow b$

Where $\sigma$ is the starting symbol?
End Semester Examination, Dec. 2015  
MCA - First Semester  
INFORMATION AND COMMUNICATION TECHNOLOGY (MCA-102-CB)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 1  

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  
a) Which of the following searches website by keywords?  
i) Web bugs  
ii) Search engine  
iii) Portals  
b) Which of the following cannot be done using e-mail?  
i) Send an attachment.  
ii) Forward an e-mail.  
iii) Copy file from a remote computer.  
c) Which of the following is essential component of communication cycle?  
i) Message  
ii) Interpreter  
iii) Email account  
d) Full form of Wi-Fi is ________.  
e) Full form of GPS is ________.  
f) ________ is a program that can infect other programs by modifying them, the modification includes a copy of virus program, which can go on to infect other programs.  
g) Define E-Commerce.  
h) Define WWW.  
i) Define ERP.  
j) Define patents.  

PART-A

Q.2  
a) Discuss various current IT trends.  
10  
b) Write short notes on Android and Facebook.  
10

Q.3  
a) What is difference between internet, intranet and extranet?  
5  
b) Write a short note on computer viruses.  
10  
c) What are the advantages of e-mail?  
5

Q.4  
a) What is the difference between Wi-Fi and Bluetooth?  
7  
b) What is GPS? How does it works?  
7  
c) Write short notes on 2G, 3G and 4G.  
6

PART-B

Q.5  
a) What is considered as the date of patent?  
5  
b) What is copyright? What does copyright protect? How is a copyright different from a trademark?  
10  
c) Is hacking a cyber crime? If yes, explain.  
5

Q.6  
Discuss the role of ICT in health problems? Explain in detail.  
20

Q.7  
a) What is data mining? Discuss the various steps in data mining.  
10
b) Write a short note on neural network.

### End Semester Examination, Dec. 2015
MCA - First Semester
PROGRAMMING IN ‘C’ (MCA-103-CB)

Time: 3 hrs

Max Marks: 100

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1

a) Define a function.

b) Explain tower of Hanoi problem.

c) Explain the difference between declaration and definition.

d) Why are arrays needed?

e) Explain sparse matrix.

f) When will one prefer to work with a switch statement?

g) What is the advantage of using structures?

h) Fill in the blank with appropriate word:
   i) A structure member variable is generally accessed using a _________.
   ii) _________ permits sharing of memory among different types of data.
   iii) The standard streams in C are _________, _________ and _________.
   iv) _________ file can be processed sequentially as well as randomly.

### PART A

Q.2

a) Compare the use of If_else construct with that of ternary operator. Discuss with the help of a suitable example.

b) Write a program to input the elements of a two-dimensional array. From this array make two arrays to store all odd elements of the array into first array and store all even elements into the second array.

Q.3

a) How is comma operator useful in a for_ loop? Explain with the help of a relevant example.

b) Write a program to reverse a string:
   i) Using recursion.
   ii) Without recursion.

Q.4

a) What do you understand by scope of a variable? Explain it with suitable a example in detail.

b) What are header files? Why they are important? Can we write a C program without any header file?

c) Distinguish between break and continue statement.

### PART B

Q.5

a) What is an array of pointers? How is it different from a pointer to an array?

b) Explain using a program, how pointer variables can be used to access string.

Q.6

a) Differentiate between structure and an array.
b) Create a structure to specify data of customers in a bank. The data to be stored is: account number, name, and balance in account. Assume maximum of 200 customers in the bank.
   i) Write a function to print the account number and name of each customer.
   ii) Write a function to print a message “Hello” if the name of customer starts with a vowel.

Q.7  a) What is a file? Why do we need to store data in a file? Differentiate between a text file and a binary file.

b) Write a program to count number of characters in a file.
Q.1 Answer the following:
   a) Explain any two types of networks.
   b) Discuss the advantages of routers.
   c) Discuss briefly DTE and DCE.
   d) Explain the difference between switch and hub.
   e) What is the difference between communication and transmission?
   f) What is subnet, describe?
   g) Differentiate between baseband and broadband transmission.
   h) Describe briefly various types of bridges.
   i) Name all the layers of TCP/IP.
   j) Define file transfer protocol.

   2x10

PART-A

Q.2 a) What do you mean by data communication? Explain its characteristics and components. 7
   b) Discuss the various network topologies with their respective merits and demerits. 10
   c) Differentiate between internet and intranet with a suitable example. 3

Q.3 Explain the following:
   a) Differentiate between service-point-address, logical address and physical address. 7
   b) What are the responsibilities of data-link layer and physical layer? Explain. 8
   c) Write a short note on Bluetooth. 5

Q.4 a) What are the some of the factors that determine whether a communication system is a LAN, MAN or WAN? Explain. 10
   b) Define the three transmission modes with a suitable example. 5
   c) What are the two types of line configurations? Explain. 5

PART-B

Q.5 a) What do you mean by routing? Explain distance vector routing and link state routing in detail. 15
   b) Write a short note on electronic-mail. 5

Q.6 a) What are the advantages of IPv6 over IPv4? How address space is assigned in IPv6? Also explain IPv6 packet format in brief. 15
   b) What do you mean by congestion control? Explain. 5
Q.7 Write short notes on:
   a) Passive and active intruders.
   b) Types of virus.
   c) Message authentication.
   d) Fire walls.
End Semester Examination, Dec. 2015  
MCA - First Semester  
DIGITAL DESIGN AND COMPUTER ORGANIZATION (MCA-105-CB)

Time: 3 hrs  
Max Marks: 100  
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 Multiple choice questions:
   a) Micro instructions are stored in computer memory.
      i) Primary ii) Secondary iii) Control iv) Cache
   b) Which flip-flop is used to store data in registers?
      i) D ii) JK iii) RS iv) None of above.
   c) The decoded instructions are stored in _________.
      i) IR ii) PC iii) Registers iv) MDR
   d) AC+ABC=AC  
      i) True ii) False
   e) $X = \overline{A} + \overline{B} + \overline{C}$ is equivalent to which gate.
      i) NAND ii) NOR iii) AND iv) OR

Short answer questions:
   f) Name the universal gates with a block diagram.
   g) Convert $(765)_{10} = (?)_2$
   h) What is the output of $\overline{ABC}$ after applying De Morgan’s theorem?
   i) What is excess 3 code of 735?
   j) What do you mean by K-Map?  

PART-A

Q.2 a) Convert $(12.456)_8$ into its binary, octal and hexadecimal equivalent.  
   b) What do you mean by logic gates? Explain any five logic gates with their truth table in detail.

Q.3 Explain the following with an example:
   a) Encoder. 
   b) Decoder.  
   c) Multiplexer. 
   d) Binary adder.

Q.4 a) Simplify the following Boolean functions in product of sum form by means of a four variable map.
      i) $F(w, x, y, z) = (2, 3, 4, 5, 7, 12, 14)$  
      ii) $F(x, y, z) = (0, 3, 4, 7)$
iii) \( F(w, x, y, z) = (1, 3, 5, 8, 11, 13) \)

b) Simplify the following expression using Boolean algebra.
   i) \( ABC + AB'C \)
   ii) \( A'B + B'C + A'C \)
   iii) \( AB + A(CD + CD') \)
   iv) \( D + AB \)

\[ \text{PART-B} \]

Q.5 Explain the following flip-flops:
   a) S-R   b) J-K   c) T   d) D   e) Master slave

Q.6 a) Explain different types of shift register.
   b) What do you mean by construction cycle? Explain its different phases in details.

Q.7 a) What are various types of interrupts?
   b) What are various types of constructors? Explain with the help of a block diagram.
**End Semester Examination, Dec. 2015**  
**MCA - Second Semester**  
**LINEAR ALGEBRA AND STATISTICAL TECHNIQUES (MCA-204)**  

Time: 3 hrs  
Max Marks: 75  
No. of pages: 3  

Note: Attempt **FIVE questions in all**; taking at least **ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

**Q.1**  
(a) Define projection of $V_2$ on the $x-axis$.
(b) Show that the set $\{(1,0),(0,1)\}$ is linearly independent in $V_2$.
(c) What is rank of the null matrix of order 4?
(d) What is sum and product of the eigen-values of the matrix given below?  
\[
\begin{bmatrix}
2 & 5 & 4 \\
0 & 3 & 1 \\
0 & 0 & 1
\end{bmatrix}
\]
(e) Define inner product of complex n-vectors $X = [x_1, x_2, \ldots, x_n]^T$ and $Y = [y_1, y_2, \ldots, y_n]^T$.
(f) Define regression coefficient of $Y$ on $X$.
(g) If $Z$ is standard normal variate, find $P(-3 \leq z \leq 3)$.
(h) What do you mean by feasible region of an LPP?
(i) What do you mean by unbalanced transportation problem?
(j) State the condition for non-degenerate solution of a transportation problem.

**1½x10**

**UNIT-I**

**Q.2**  
(a) Show that $S = \left\{ \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix} \right\}$ is a basis for a vector space $M_{22}$ formed by matrices of order 2.

(b) Find the matrix of the reflection operator about the $yz$-plane on $\mathbb{R}^3$.

**Q.3**  
(a) Using Gauss-Jordan method, find the inverse of the matrix:  
\[
A = \begin{bmatrix}
1 & 3 & 3 \\
1 & 4 & 3 \\
1 & 3 & 4
\end{bmatrix}
\]

(b) Determine the value of $\lambda$ for which the system of equations:  
\[
\begin{align*}
x_1 + x_2 + x_3 &= 2 \\
x_1 + 2x_2 + x_3 &= -2 \\
x_1 + x_2 + (\lambda - 5)x_3 &= \lambda
\end{align*}
\]
has no solution.

**UNIT-II**

**Q.4**  
(a) Show that eigen values of a Hermitian matrix are all real.
(b) Diagonalize the matrix:
Q.5  a) Show that the following transformation is orthogonal:

\[ y_1 = \frac{1}{3}x_1 + \frac{2}{3}x_2 + \frac{2}{3}x_3, \]
\[ y_2 = \frac{2}{3}x_1 + \frac{1}{3}x_2 - \frac{2}{3}x_3, \]
\[ y_3 = \frac{1}{3}x_1 - \frac{2}{3}x_2 + \frac{2}{3}x_3. \]

b) Show that the matrix: \[ A = \begin{bmatrix} 2 & 3 & 4 \\ 0 & 2 & -1 \end{bmatrix} \] is not diagonalizable.

---

UNIT-III

Q.6  a) Find the Kurl Pearson coefficient of correlation for the following data:

<table>
<thead>
<tr>
<th>X</th>
<th>55</th>
<th>56</th>
<th>58</th>
<th>59</th>
<th>60</th>
<th>60</th>
<th>62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>35</td>
<td>38</td>
<td>38</td>
<td>39</td>
<td>44</td>
<td>43</td>
<td>45</td>
</tr>
</tbody>
</table>

b) Fit a binomial distribution to the following data and compare the theoretical frequencies with the observed ones:

<table>
<thead>
<tr>
<th>x</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td>2</td>
<td>14</td>
<td>20</td>
<td>34</td>
<td>22</td>
<td>8</td>
</tr>
</tbody>
</table>

---

UNIT-IV

Q.7  a) Going through the following data, can one say that education depends upon sex?

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>10</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Middle standard</td>
<td>15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>High School</td>
<td>25</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Graduation</td>
<td>50</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

b) Find the standard deviation for the following distribution:

<table>
<thead>
<tr>
<th>x</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>P(x) :</td>
<td>1/8</td>
<td>1/6</td>
<td>1/8</td>
<td>1/4</td>
<td>1/12</td>
</tr>
</tbody>
</table>

---

Q.8  a) Using graphical method, solve the following LPP:

Maximize \[ z = 2x + 3y \]

Subject to the constraints:
3x + 6y ≤ 24
2x + y ≤ 10
and x, y ≥ 0

b) Using simplex method, solve the following LPP:
Maximize
\[ z = 4x_1 + 10x_2 \]
Subject to the constraints:
\[ 2x_1 + x_2 \leq 50 \]
\[ 2x_1 + 5x_2 \leq 100 \]
\[ 2x_1 + 3x_2 \leq 90 \]
and \( x_1, x_2 \geq 0 \)

Q.9

a) Using north-west corner method, find initial basic feasible solution to the following transportation problem:

<table>
<thead>
<tr>
<th></th>
<th>D₁</th>
<th>D₂</th>
<th>D₃</th>
<th>D₄</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₁</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>O₂</td>
<td>8</td>
<td>9</td>
<td>2</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>O₃</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Demand</td>
<td>6</td>
<td>10</td>
<td>15</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

b) Find on optimal basic feasible solution to the following transportation problem:

<table>
<thead>
<tr>
<th></th>
<th>D₁</th>
<th>D₂</th>
<th>D₃</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₁</td>
<td>7</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>O₂</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>O₃</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Demand</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Q.1  
a) Define group homomorphism and kernel of homomorphism.  
b) Define reflection about the \( x \)-axis in \( V_2 \). Show that it is a linear transformation.  
c) Give example of a matrix, whose rank is zero.  
d) State consistency theorem.  
e) Define eigenvalue of a matrix. What are eigenvalues of \( A^{-1} \) if \( A = \begin{bmatrix} 2 & 5 \\ 0 & 3 \end{bmatrix} \).  
f) Define covariance of pair of random variables \( X \) and \( Y \).  
g) Find parameter of the Poisson distribution \( \lambda \) for the following data:  
\[
\begin{array}{c|c|c|c|c}
  x & 0 & 1 & 2 & 3 & 4 \\
  y & 46 & 38 & 22 & 9 & 1 \\
\end{array}
\]

h) Find \( P(-1.96 \leq z \leq 1.96) \) for standard normal variate \( Z \).  
i) Define the term: population, sample and sample size.  
j) Define \( x^2 \) and tell what it describes.

Q.2  
a) Define projection of \( V_3 \) on the \( xy \)-plane and find its matrix.  
b) Reduce the following matrix to normal form and hence find its rank:  
\[
\begin{bmatrix}
  3 & 2 & -1 \\
  4 & 2 & 6 \\
  7 & 4 & 5 \\
\end{bmatrix}
\]

Q.3  
a) Discuss the consistency of the system of equations:  
\[
\begin{align*}
  2x - 3y + 6z - 5w &= 3 \\
  y - 4z + w &= 1 \\
  4x - 5y + 8z - 9w &= \lambda \\
\end{align*}
\]
For various values of \( \lambda \). If consistent, find the solution.  
b) Determine real value of \( \lambda \) for which the system of following equations have non-trivial solution:  
\[
\begin{align*}
  x + 2y + 3z &= \lambda x \\
  3x + y + 2z &= \lambda y \\
  2x + 3y + z &= \lambda z \\
\end{align*}
\]
Q.4  a) Show that the matrix: \[ \begin{bmatrix} 2 & 3 & 4 \\ 0 & 2 & -1 \\ 0 & 0 & 1 \end{bmatrix} \] cannot be reduced to a diagonal matrix. 10

b) Find modal matrix P which diagonalize the matrix: \[ \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix} \] and hence diagonalize the given matrix. 10

**PART-B**

Q.5  a) Find the Karl Pearson coefficient of correlation between the industrial production and export using the following data:

<table>
<thead>
<tr>
<th>Production in croretons:</th>
<th>55</th>
<th>56</th>
<th>58</th>
<th>59</th>
<th>60</th>
<th>60</th>
<th>62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export in croretons:</td>
<td>35</td>
<td>38</td>
<td>38</td>
<td>39</td>
<td>44</td>
<td>43</td>
<td>45</td>
</tr>
</tbody>
</table>

b) Fit a binomial distribution to the following data:

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f )</td>
<td>6</td>
<td>20</td>
<td>28</td>
<td>12</td>
<td>8</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

10

Q.6  a) For all children taking an examination, the mean mark was 60% with a standard deviation of 8%. A particular class of 30 children achieved an average of 63%. Is this unusual? 10

b) Fit a Poisson distribution to the following data and test for its goodness of fit at 5% level of significance.

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f )</td>
<td>419</td>
<td>352</td>
<td>154</td>
<td>56</td>
<td>19</td>
</tr>
</tbody>
</table>

10

Q.7  a) Use simplex method to solve the following LPP:

Maximize \( P = x + 4y - z \)

Subject to the constraints

\[-5x + 6y - 2z \leq 30\]
\[-x + 3y + 6z \leq 12\]

\[\text{and} \quad x, y, z \geq 0\] 10

b) Obtain an optimal solution to the following transportation problem using MODI method:

<table>
<thead>
<tr>
<th></th>
<th>19</th>
<th>30</th>
<th>50</th>
<th>12</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>( O_1 )</td>
<td>19</td>
<td>30</td>
<td>50</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>( O_2 )</td>
<td>70</td>
<td>30</td>
<td>40</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>( O_3 )</td>
<td>40</td>
<td>10</td>
<td>60</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>Demand</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>
Q.1 a) What type of commerce is enabled by technology?<br>   b) JavaScript is a _______ language.<br>   c) Group discussion through e-mails is accomplished by using _______.<br>   d) A home page is ___________.
   e) The C in CSS stands for ____________.
   f) Which of the following is a network node that is used to improve network traffic and to set up as a boundary that prevents traffic from one segment to cross over to another?<br>      i) Router.<br>      ii) Firewall.<br>      iii) Gateway.<br>      iv) Heuristic.<br>   g) What is <tt> tag in HTML?<br>   h) Is this correct syntax to include JS codes inside HTML page?<br>      <Script type="Text/JavaScript">\\/script>  \[i/Scrip\]
   i) Which syntax is used to describe elements in CSS?<br>      i) Protectors.<br>      ii) Selections.<br>      iii) Both i) and ii).
   iv) None of the above.
   j) Which of the following risks is not greater in an electronic funds transfer (EFT) environment than in a manual system using paper transactions?<br>      i) Unauthorized access and activity.<br>      ii) Duplicate transaction processing.<br>      iii) Higher cost/transaction.<br>      iv) Inadequate backup and recovery capabilities.

UNIT-I

Q.2 Write short notes on the followings:<br>   a) Search engine. 5<br>   b) E-mail. 5<br>   c) HTTP. 5

Q.3 a) What are the various key issues in designing a website? 5<br>   b) How tables are designed in HTML? Explain all tags and attributes with an example. 10
**UNIT-II**

Q.4 What are cascading style sheets? Explain their types with suitable examples.  

Q.5 Explain document object model in detail.

**UNIT-III**

Q.6 a) Explain various data types in VB Script.  
   b) Create a registration form in VB Script.

Q.7 What are the various control structures in JavaScript? Explain with examples.

**UNIT-IV**

Q.8 Write short notes on:  
   a) Smart card.  
   b) Credit card.  
   c) Digital tokens.

Q.9 What is E-Commerce? Differentiate between traditional business and modern E-Commerce business.
End Semester Examination, Dec. 2015  
MCA - Third Semester  
LOGICAL AND QUANTITATIVE REASONING-I (MCA-302-CB)

Time: 3 hrs  
Max Marks: 50  
No. of pages: 3  

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1  
a) If in a code language COULD is written as BNKTC and MARGIN is written as LZQFHM, how will MOULDING will be written in that code.
b) In following alphabet series one term is missing, identify that term:
   U, O, I, ?, A  
c) Complete the series: 1, 5, 14, 30, 55, 91, _______.  
d) In a row of boys, sam ranked 9th from the top and 38th from the bottom. How many boys are there in a row?  
e) What was the day of week on 28th May, 2006?  
f) Pointing towards a person, a man said to a woman, “his mother is the only daughter of your father“. How is the woman related to that person?  
g) Manipulate the symbols and find the missing number:  
   if 5*3^4 = 4; 6*2^3 = 5; 7*4^5 = 6 the 3*4^5 = ?  
   a) 2  b) 23  c) 17  d) 12  
h) There are nine figures, group the given figures into three classes/groups using each figure only once.

   ![Figures]

   i) 1, 3, 5; 2, 6, 9; 4, 7, 8  
   ii) 2, 3, 4; 5, 6, 8; 9, 1, 7  
   iii) 1, 3, 5; 2, 6, 8; 4, 7, 9  
   iv) 3, 2, 4; 6, 5, 8; 7, 9, 1  
   i) If REQUEST is written as S2R52TU, then how will ACID be written?  
   j) If A=2, M=26, Z=52, then BET=?  
      i) 24  ii) 54  iii) 64  iv) 72

PART-A

Q.2  
a) Find the next term in the series:  
   BMO, EOQ, HQS, _______.  
b) i) Acting: Theatre: : Gambling: : ?  
   ii) Cricket: Bat: : Hockey: ?  
   1x10
c) Kunal walks 10 km towards North. From there he walks 6 km towards South. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point?

Q.3  
4  a) In a row of 40 girls, when Komal was shifted to her left by 4 place, her number from the left end of the row become 10. What was the number of Swati from the right end of the row if Swati was three places to the right of Komal’s original position?  
4  b) What is the smallest number of ducks that could swim in the platform, two ducks in front of a duck, two ducks behind a duck and a duck between two ducks?  
2  c) Father is aged three times more than his son Rohit. After 8 years, he would be two and a half time of Rohit’s age. After further 8 year, how many times would he be of Rohits age?

Q.4  
3  a) If 30th January, 2003 was Thursday , what was the day on 2nd March, 2003.  
2  b) If 1st October is Sunday, then first November will be?  
4  c) i) AYD, BVF, DRH, ________ KGL  
ii) A, CD, GHI, ________ UVWXY.  
iii) AYBZC, DWEXF, GUHVI, JSDKL, ________.
iv) ejo, tyd, ins, xch ________.
5  v) Y, B, T, G, O, ________.

PART-B

Q.5  
3  a) Pointing to a man on the stage, Rashi said, “He is the brother of the daughter of the wife of my husband”. How is the man on the stage related to Rashi?  
3  b) i) Sorrow : death :: Happiness :?  
   a) Love   b) Dance   c) Cry   d) Birth  
   ii) House : Garbage :: ore :?  
   a) Rubbish   b) Gangue   c) Sand   d) Dregs  
4  c) A woman introduces a man as the son of the brother of her mother. How is man related to woman?  
3  i) Nephew   ii) Son   iii) Cousin   iv) Uncle

Q.6  
3  a) If L stands for +, M stand for -, N stands for X, P stands for ÷ then  
14 N 10 L 42 P 2 M 8=?  
3  b) If A stands +, B stands for -, C stands for X, then what is the value of  
(10 c4) A (4c4)B6  
3  c) If + means X, X means -, ÷ means + and – means ÷, then which of the following gives the result of  
175 – 25 ÷ 5 + 20×3+10 ?  
4  i) 77   ii) 160   iii) 240   iv) 2370

Q.7  
4  a) Choose the alternatives which most closely resembles the mirror image of the given combination.  
4  i) WHITE  
   a) ⊳TIHW   b) ⊳TIHM   c) ⊳TIHW   d) ⊳TIHW  
ii) BRISK  
   a) ⊳RISKR   b) ⊳RISKR   c) ⊳RISKR   d) ⊳RISKR

b) i)

Problem figures  

Answer figures
Select a figure from amongst the answer figures which will continue the same series as established by the problem figure.

ii) 

Problem figure

Answer figure

Select a figure from the answer figure which will continue the same series as established by the problem figure.
Q.1 Multiple choice questions:

a) In immediate addressing the operand is placed
   i) in the CPU register
   ii) after OP code in the instruction
   iii) in memory
   iv) in stack

b) Pipeline implements
   i) fetch instruction
   ii) decode instruction
   iii) fetch operand
   iv) calculate operand
   v) execute instruction
   vi) all of above

c) A time sharing system imply
   i) more than one processor in the system
   ii) more than one program in memory
   iii) more than one memory in the system
   iv) None of above

d) A cache block is written into the main memory when
   i) valid bit is not set
   ii) every cycle
   iii) dirty bit is set
   iv) none of the above

e) The idea of cache memory is based
   i) on the property of locality of reference.
   ii) on the heuristic 90-10 rule.
   iii) on the fault that references generally tend to cluster.

f) How many memory chips of (128x8) are needed to provide a memory capacity of 4096x16?
   i) 64  ii) AB  iii) 32  iv) None.

g) In a non vectored interrupt the address of the interrupt service routine is
   i) obtained from interrupt address table.
   ii) supplied by the interrupting I/O device.
   iii) obtained from vector address generator device.
   iv) Assigned to a fixed memory location.
h) A control character is sent at the beginning as well as at the end of each block in the synchronous transmission in order to:
i) Synchronize the clock of transmitter and receiver.
ii) Supply information needed to separate the incoming bits into individual character.
iii) Detect the error in transmission and received system.
iv) Both i) and iii).
i) Zero address instruction format is used for:
i) RISC architecture.  
   ii) CISC architecture.
iii) Von Neuman architecture.  
   iv) Stack organized architecture.

j) Associative memory is sometimes called as:
i) Virtual memory.  
   ii) Cache memory.
iii) Main memory.  
   iv) Content addressable memory.

UNIT-I

Q.2 Show the step-by-step multiplication process of $10 \times -14$ using Booth algorithm. Assume 5–bit registers to hold signed numbers.

Q.3 Describe various instruction code formats. Which one is better, explain with an example.

UNIT-II

Q.4 Explain the concept of priority interrupt. Describe daisy chaining technique in detail.

Q.5 Explain various modes of transfer. Why does DMA have priority over the CPU when both request a memory transfer? Why read and write lines of DMA controller are bidirectional?

UNIT-III

Q.6 Discuss about the implementation of virtual memory. What is its importance?

Q.7 a) How many $128\times8$ RAM chips are needed to provide a memory capacity of 4096 bytes?
b) How many lines of the address bus must be used to access 4096 bytes of memory? How many of these lines will be common to all the chips?
c) How many lines must be decoded for chip select? Specify the size of the decoder. Draw the memory connection to CPU.

UNIT-IV

Q.8 Explain Flynn’s classification of computers. Describe four segment instruction pipelines with an example.

Q.9 Define the following terms:
a) RISC pipeline.
b) Interleaved memory organization.
c) Handling of branch instruction.
End Semester Examination, Dec. 2015
MCA - Third Semester
DATA STRUCTURES (MCA-303-CB)

Time: 3 hrs
Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1 a) Finding the location of the element with a given value is:
   i) Traversing   ii) Sorting   iii) Searching
b) To represent hierarchical relationship between elements, which data structure is suitable?
   i) Deque   ii) Priority   iii) Tree   iv) None of the above
c) Which data structure is used in breadth-first search of a graph to hold nodes?
   i) Stack   ii) Queue   iii) Tree   iv) Array
d) A binary search tree whose left subtree and right subtree differ in height by at most one is called ________.
   i) Red-Black tree   ii) AVL tree   iii) Lemma tree   iv) None of the above
e) Which of the following algorithm design technique is used in quick-sort algorithm?
   i) Dynamic programming   ii) Backtracking   iii) Divide and conquer   iv) None of the above

State whether TRUE or FALSE:
f) If a node in a binary search tree has two children, then its inorder predecessor has no right child.
g) The OS of a computer may periodically collect all free memory space to form contiguous block of free space. This is called Garbage collection.
h) Sparse matrix have many zero entries.
i) When new data are to be inserted into a data structure, but there is not available space; this situation is called overflow.
j) Multidimensional arrays are used to store information in a matrix form.

Short answer questions:
k) Define tree.
l) Define data.
m) Define information.
n) Define algorithm.
o) Define record.

PART-A

Q.2 a) For the following set of elements:
482, 106, 28, 970, 351, 46, 572, 667.
Arrange them in ascending order using radix sort method. Explain it step by step.

10
b) What is data structure? Discuss the objectives of data structure. Also, mention the various operations of data structure in detail.  

Q.3  
a) Given the following arithmetic expression in infix notation:  
\[ \frac{12}{(7-3)} + 2 \times (4+7) - 7 \]  
Translate this expression into postfix notation. Show each step.  
b) Write a short note on towers of Hanoi problem.  

Q.4  
a) Write an algorithm to insert a new node in the beginning of linked list.  
b) Discuss some applications of linked list.  
c) What is circular linked list? Why it is used? How is it different from linked list?  

**PART-B**  

Q.5  
a) What are threads? How threads are important in binary tree? Give an example.  
b) Differentiate between pre-order, in-order and post-order tree traversal with algorithms.  

Q.6  
a) Define the following terms:  
   i) Multigraph  
   ii) Directed graph  
   iii) Path  
   iv) In-degree and out-degree of graph  
   v) Weighted graph  
b) Write the Kruskal’s algorithm for minimum spanning tree.  

Q.7  
a) What is Hashing? List various types of hashing techniques. Explain its types with an example.  
b) Describe the difference between fixed and variable length record.  
c) What is the difference between primary index and secondary index?
Q.1  a) A graphic package contains number of housekeeping task such as:
   i) Clearing a display screen  iii) Both i) and ii)  v) None of the above
   ii) Initializing parameters  iv) None of the above
b) CAD means:
   i) Car aided design  iii) Computer aided design  v) None of the above
   ii) Computer art design  iv) None of the above
c) A touch screen display is an:
   i) Input device  iii) Both i) and ii)  v) None of the above
   ii) Output device  iv) None of the above
d) The light pen is an:
   i) Input device  iii) Both i) and ii)  v) None of the above
   ii) Output device  iv) None of the above
e) Basic geometric transformation include:
   i) Translation  ii) Scaling  iii) Rotation  iv) All of the above
f) An object can be viewed as a collection of:
   i) One segment  iii) Several segment  v) None of the above
   ii) Two segment  iv) None of the above
g) In which polygon object appears only partially?
   i) Convert polygon  iii) Both i) and ii)  v) None of the above
   ii) Concave polygon  iv) None of the above
h) The space in which the image is displayed are called:
   i) Screen co-ordinate system.
   ii) Clipping window.
   iii) World co-ordinate system.
   iv) Device co-ordinate system.
i) Two consecutive translation $t_1$ and $t_2$ are:
   i) Additive  iii) Multiplicative  v) None of the above
   ii) Subtractive  iv) None of the above
j) An _______ can be considered as an extension of spherical surface.
   i) Bezier  iii) Shearing  v) None of the above
   ii) Ellipsoid  iv) None of the above

Write short notes on following:
k) Basic concept of computer graphics.
Q.2  a) Explain working of a CRT in details.  
      b) What do you mean by a frame buffer? How it helps in process of display processor?

Q.3  a) What do you mean by a scan conversion? What would be the points to draw line between (2, 3) and (11, 7) using Bresenhem’s line drawing algorithm?  
      b) Explain following:  
          i) Basic interactive graphical technique.  
          ii) Circle drawing algorithm.

Q.4  a) What do you mean by seed fill algorithm? Explain it in details.  
      b) Differentiate between Bezier curve and B-spline curve.

Q.5  a) Explain transformation in details.  
      b) Differentiate following:  
          i) 2D and 3D.  
          ii) Perspective and parallel projection.

Q.6  a) What do you mean by window to viewport mapping? Explain through an example.  
      b) Explain Sutherland Hodeman algorithm for polygon clipping.

Q.7  a) Explain significance of wireframe model in details.  
      b) What do you mean by back face detection? Explain Z-buffer algorithm for back face detection.
Q.1 Multiple choice questions:

a) The decoded instruction is stored in:
   i) IR          ii) PC
   iii) Registers iv) MDR

b) The output of gate is low when atleast one of its input is low. It is true for:
   i) AND          ii) OR
   iii) NAND       iv) NOR

c) PC program counter is also called______.
   i) Instruction pointer ii) Memory pointer
   iii) Data counter iv) File pointer

d) CPU does not perform the operation ________.
   i) Data transfer ii) Logic operation
   iii) Arithmetic operation iv) All of the above.

e) The NOR gate is complement of
   i) AND gate          ii) OR gate
   iii) NAND       iv) NOT

f) To read the control words sequentially ________ is used.
   i) PC          ii) IR
   iii) UPC       iv) None of the above.

g) ________ is a single address space for storing both memory and input/out devices.
   i) Memory mapped input/out ii) Isolated input/out
   iii) Separate input/out iv) Optimum input/out

h) Interrupts which are indicated by input/out drive are ________.
   i) Internal          ii) External
   iii) Software        iv) All of the above

i) The DMA controller has ________ registers.
   i) 4          ii) 2
   iii) 3       iv) 1

j) The DMA transfer is initiated by:
   i) Processor          ii) Process being executed
   iii) Input/output device iv) OS

Answer the following questions:

k) What is number system?
l) What is flip-flop?
m) What is register?
n) What is K-Map?
o) What is Boolean function?  

**PART-A**

Q.2 What do you mean by flip-flops? What are various types of flip-flops? Explain in detail.  

Q.3 a) What are:  
   i) Encoders  
   ii) Decoders  
   iii) Multiplexer  
   iv) De-multiplexer  

Q.4 Simplify the following Boolean functions in sum of product form:  
   a) $F(A, B, C, D) = (1, 2, 4, 5, 6, 13, 14)$  
   b) $F(A, B, C) = (1, 4, 5, 6)$  
   c) $F(A, B, C, D) = (2, 3, 4, 6, 11, 14)$  
   d) $F(A, B, C) = (2, 3, 6, 7)$  

**PART-B**

Q.5 a) What do you mean by memory reference instructions? List different types of memory reference instructions.  
   b) Explain stack organization of register in detail.  

Q.6 Explain the working of DMA with a block diagram.  

Q.7 Explain the following:  
   a) Address mapping.  
   b) Array multiplier.  
   c) Mode of transfer.  
   d) Page replacement.  

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End Semester Examination, Dec. 2015
MCA - Third Semester
WEB APPLICATION DEVELOPMENT USING PHP (MCA-306(CB))

Time: 3 hrs
Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q.1 is compulsory. Attempt any TWO questions from Part A and TWO questions from Part B. Each question carries equal marks.

Q.1
a) Which tag is used to center the text?
b) The <title> tag is present under which tag?
c) Which tag is used to underline the text?
d) Which attribute is used to change the table border?
e) PHP is a ________ language.
f) JavaScript is ________ side scripting language.
g) The tag used in HTML to include external style sheet is __________.
h) Which statement prints in PHP?
i) In PHP, variable name starts with ________.
j) In PHP, variables are case sensitive. (True/False) 1½x10
k) Which of the following method sends input to a script via a URL?
   i) Get 
   ii) Post
   iii) Both
   iv) None
l) Which of the following is not true?
   i) PHP can be used to develop web applications.
   ii) PHP applications cannot be compiled.
   iii) PHP makes a website dynamic.
   iv) PHP cannot be embedded into HTML. 1½x2
m) Write few features of HTML. 2

PART-A

Q.2
a) What is <IMG> tag? What are the attributes that can be used with <IMG> tag? 10
b) How forms are designed in HTML? Explain with a suitable example. 10

Q.3 What is CSS? Explain the types of CSS with different set of examples. 20

Q.4
a) What are strings in PHP? What are various string functions in PHP? Explain with examples. 10
b) Define open source software. Explain advantages and disadvantages of open source software. 10

PART-B

Q.5
a) Define a PHP class and an object in PHP? What are benefits of creating an object? 10
b) What is exception handling in PHP? Explain with an example. 10
Q.6 a) Explain various control and looping structure in JavaScript.  
              b) What is JavaScript? What are the various features of JavaScript?  
              c) Which different types of shells are available in UNIX?  
              d) What are two different time values supported by UNIX?  
              e) What does the ‘i’ in inode connote?  
              f) Write a command to search all lines in a file which end with a semicolon.  
              g) Construct a pipeline to merge the contents of the files a.txt, b.txt and c.txt, sort them and display sorted output on the screen.  
              h) How will you terminate a process which has gone in an infinite loop?  
              i) How will you send mail to all users who belong to a particular group?  
              j) How will you use positional parameter in shell programming? Give one example.  
              k) How will you find whether the value assigned to a variable has been stored in it or not?  
              l) What is the purpose of command ‘alias’ in relation with the ‘mail’ command.  

PART-A

Q.7 a) What is MYSQL? What are various features of MYSQL?  
              b) Explain various commands of MYSQL with examples:  
                  Insect, update, alter, delete, and create.  

PART-B

Q.1 a) Which different types of shells are available in UNIX?  
              b) What are two different time values supported by UNIX?  
              c) What does the ‘i’ in inode connote?  
              d) Write a command to search all lines in a file which end with a semicolon.  
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              h) How will you use positional parameter in shell programming? Give one example.  
              i) How will you find whether the value assigned to a variable has been stored in it or not?  
              j) What is the purpose of command ‘alias’ in relation with the ‘mail’ command.
End Semester Examination, Dec. 2015
MCA - Fourth Semester
RAPID APPLICATION DEVELOPMENT (MCA-401)

Time: 3 hrs
Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1
a) The ______ property is common for many tools in VB.
b) Option buttons can be grouped in a ______ control.
c) A ______ bar appears on the top of the screen.
d) ______ is a data type that can be used to declare a text of maximum 10 million characters.
e) ______ variables are not reinitialized each time.
f) ______ box provides a set of choices to the user.
g) If a variable is not declared then it becomes of ______ data type.
h) A form in VB can be connected to a database using ______ control.
i) OLE control is used to ______.
j) The ______ property determines whether a control is displayed to the user.

UNIT-I

Q.2
a) Why Visual Basic is popularly known as event drive language? 5
b) Explain all the components of integrated development environment of VB. 10

Q.3 Explain the following terms:
a) Tool Box 5
b) GUI 5
c) Forms 5

UNIT-II

Q.4
a) Explain five important properties of a List Box. 5
b) What is a module? What is its need? Explain with the help of an example. 10

Q.5 Write all the steps of creating a menu using menu editor in VB. 15

UNIT-III

Q.6 Explain the following terms:
a) With statement. 5
b) Built in data types. 5
c) Logical operators. 5

Q.7 Explain all the conditional statements available in VB. 15
Q.8 Explain the following terms:
   a) Data bound controls.  
   b) The jet database engine. 
   c) DAO

Q.9 Explain all the features available in a crystal report.

End Semester Examination, Dec. 2015
MCA - Fourth Semester
ADVANCED DATABASES (MCA-404)

Time: 3 hrs  Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Choose the correct option for the following:
   a) Every weak entity set is to be a part of the:
      i) One to one relationship set.  
      ii) Many to many relationship set. 
      iii) One to many relationship set. 
      iv) None of the above.
   b) A relation can be logically connected to another relation by defining a:
      i) Foreign key.  
      ii) Common field. 
      iii) Primary key. 
      iv) Hyperlink.
   c) Select statement include:
      i) Select from where. 
      ii) Views. 
      iii) Sequences. 
      iv) None of the above 
   d) SQL functions include:
      i) Single row functions. 
      ii) Group functions. 
      iii) Both i) and ii). 
      iv) None of the above
   e) Self join:
      i) Join two copies of same table. 
      ii) Join two copies of different table. 
      iii) Copies the table. 
      iv) None of the above
   f) CHR function returns the:
      i) Character for the decimal equivalent. 
      ii) Strips trailing character. 
      iii) Converts strings to lowercase. 
      iv) Converts string to uppercase.
   g) The properties of transaction are:
      i) Atomicity. 
      ii) Durability. 
      iii) Isolation. 
      iv) All of the above
   h) The degree of reliability is highest for:
      i) Main memory. 
      ii) Magnetic tape. 
      iii) Optical disk. 
      iv) Magnetic disk.
   i) What command do you use to include an error condition?
      i) Raise error. 
      ii) Raise-exception. 
      iii) Raise 
      iv) Exception.
   j) Which of the following types of exception can not be handled in an exception section?
      i) Syntax errors. 
      ii) Database errors. 
      iii) Data type mismatch. 
      iv) Divide by zero errors.

UNIT-I
Q.2  a) What is meant by projection join dependency? Discuss the importance of $5^{th}$ normal form.  
     b) Why BCNF is stronger than $3^{rd}$ normal form? Explain.  

Q.3  a) Explain the different Codd rules.  
     b) What are the integrity rules? Explain with suitable examples.  

**UNIT-II**

Q.4  Explain the following SQL functions with syntax and an example:  
     a) SUBSTR.  
     b) LTRIM.  
     c) Floor.  
     d) CEIL.  
     e) Round.  

Q.5  a) Explain the features of SQL.  
     b) Differentiate between SQL and SQL *Plus.  
     c) Differentiate between left join and right join.  

**UNIT-III**

Q.6  a) Explain the architecture of PL/SQL in detail.  
     b) What are the looping statements in PL/SQL? Explain with suitable examples.  

Q.7  a) What is the importance of error handling? How errors are handled in PL/SQL? Explain.  
     b) What do you mean by triggers? Explain each type of it.  

**UNIT-IV**

Q.8  What do you mean by list of values in D2k? Also explain the procedure to create it.  

Q.9  Write short notes on:  
     a) Login screen.  
     b) Alerts.  
     c) Push Buttons.  

End Semester Examination, Dec. 2015
MCA - Fourth Semester
NETWORK SECURITY AND CRYPTOGRAPHY (MCA-405A)

Time: 3 hrs  Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Answer in one word only
a) Give one example of substitution cipher.
b) Name three algebraic structures.
c) The equation of additive inverse is _________.
d) Give one example of Trojan.
e) Give one example of passive attacks.
f) Give one example of network spoofing.
g) Give one example of physical intrusion detection system.
h) Write an algorithm of symmetric key cryptography.
i) Write an algorithm for asymmetric key cryptography.
j) Full form of PKI. 1½x10

UNIT-I

Q.2 a) List and describe three preventive measures that can be taken to minimize the risk of computer virus infection, other than the use of antivirus software. 8
b) Differentiate between passive and active attacks on a computer. 7

Q.3 a) Briefly explain confidentiality, integrity and availability with respect to information security? 7
b) What are the three D's of security? Explain each D with a suitable example. 8

UNIT-II

Q.4 What is biometrics and biometrics authentication? Why there is a need to take multiple samples during the user registration process of biometrics? 15

Q.5 How will you assess the physical vulnerability of any asset? Explain the physical vulnerability assessment of building, documents and equipments. 15

UNIT-III

Q.6 Write short notes on:
a) DES and AES
b) Substitution cipher and Block cipher
c) Integrity and authentication 3x5

Q.7 What are digital signatures? How are they different from conventional signatures? Explain public key signatures with suitable example. 15
Q.8  a) Using quadratic residues solve the following congruence:
\[ x^2 = 12 \mod{17} \]

b) Find all solutions to each of the following linear solutions:
   i) \[ 7x \equiv 7 \pmod{10} \]
   ii) \[ 12x + 5 = 15 \pmod{16} \]

Q.9  a) Explain the steps of Chinese remainder theorem using suitable example.

b) Find the result of the following using the square and multiply method.
   \[ 1736^{41} \mod{2134} \]
End Semester Examination, Dec. 2015
MCA - Fifth Semester
ANALYSIS AND DESIGN OF ALGORITHM (MCA-502)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 a) The operation of processing each element in the list is called:
   i) Sorting    ii) Merging    iii) Insertion    iv) Traversal
b) The complexity of quick sort algorithm is:
   i) O(n)    ii) O(logn)    iii) O(n^2)    iv) O(nlogn)
c) Which of the following problem can be solved using backtracking approach?
   i) Queen's problem    ii) Hamiltonian cycle
   iii) Graph coloring    iv) All of the above
d) If every node u in G is adjacent to every other node v in G. A graph is said to be:
   i) Isolated    ii) Complete
   iii) Finite    iv) Strongly connected
e) Merge sort is an example of:
   i) Divide and conquer    ii) Decrease and conquer
   iii) Greedy method    iv) Dynamic programming
f) Dynamic programming use _________ optimization.
g) LC and FIFO strategies are used in _________ approach.
h) Hamiltonian path visit each _________ exactly once.
i) Complexity of merge sort is _________.
j) Adjacency matrix can be implemented using _________.

UNIT-I

Q.2 a) Write an algorithm to find the largest and second largest element from an array.

b) What do you mean by a disjoint set union? Write the algorithm with an example.

Q.3 What do you mean by divide and conquer? Write the algorithm for a binary search using divide and conquer.

UNIT-II

Q.4 a) Solve the following 0/1 knapsack problem using dynamic programming:
   \[ \begin{array}{cccc}
   n=3 & m=6 \\
   P^1=1 & P^2=2 & P^3=5 \\
   W^1=3 & W^2=2 & W^3=4 \\
   \end{array} \]

b) Write an algorithm for 0/1 Knapsack using dynamic programming.

Q.5 a) Differentiate between greedy method and dynamic programming.
b) Write the single source shortest path and also solve it with the help of an example.

UNIT-III

Q.6 Write an algorithm for Hamiltonian cycle. Also explain it with the help of an example.

Q.7 Explain Queen’s problem with state space representation. Also write an algorithm for the same.

UNIT-IV

Q.8 State and prove Cook’s theorem

Q.9 a) Differentiate between deterministic and non-deterministic algorithm.
    b) Explain NP scheduling.
End Semester Examination, Dec. 2015
MCA - Fifth Semester
DATA MINING AND DATA WAREHOUSING (MCA-503)

Time: 3 hrs Max Marks: 75
No. of pages: 1

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1 Fill in the blanks:
   a) The main aim of data mining is to ________.
   b) A data warehouse is ________.
   c) KDD stands for ________.
   d) One of the popular clustering algorithms is ________.
   e) ROLAP stands for ________.
   f) Text mining is used to ________.
   g) Data clearing involves ________.
   h) ________ is one of the ways to deal with noise in data.
   i) An outlier is defined as ________.
   j) Confusion matrix is used to ________. 1½x10

UNIT-I

Q.2 Differentiate between the following:
   a) Database and data warehouse. 7
   b) OLTP and OLAP. 8

Q.3 Write short notes on the following:
   a) ROLAP. 8
   b) KDD. 7

UNIT-II

Q.4 What is a noise? Explain the ways of removing noise from data. 15

Q.5 What do you mean by concept hierarchy generation? Explain the ways of generating concept hierarchy using an example. 15

UNIT-III

Q.6 What is the need of generating association rules from data? Explain the ways of determining the importance association rules. 15

Q.7 a) What is clustering? Why clustering is termed as unsupervised learning? 10
   b) Explain the need of clustering using an example. 5

UNIT-IV

Q.8 Write short notes on the following:
   a) Time series data. 5
Q.9 What is web mining? Explain the need of web mining using an example.  

End Semester Examination, Dec. 2015  
MCA - Third Semester  
WEB APPLICATION DEVELOPMENT USING PHP (MCA-3002)  

Q.1 Multiple choice questions:  

a) Which tag is used for arranging tags in paragraphs?  
   i) `<Bar>`     ii) `<Paragraph>`     iii) `<P>`     iv) `<a>`  

b) A web page is located using:  
   i) Universal record linking.     ii) Uniform resource locator.  
   iii) Universal record locator.     iv) Uniformly reachable links.  

c) A world wide web contains web pages:  
   i) Residing in many computers.  
   ii) Created using HTML.  
   iii) With links to other web pages.  
   iv) Residing in many computers linked together using HTML.  

d) HTML stands for:  
   i) Hypertext making links.  
   ii) Hypertext markup language.  
   iii) Higher textual marking of links.  
   iv) Hypertext mixer of links.  

e) HTML uses:  
   i) Pre-specified tags.     ii) User defined tags.  
   iii) Tags only for linking.     iv) Fixed tags defined by the language.  

f) CSS stands for:  
   i) Control style sheets.     ii) Creative style sheets.  
   iii) Cascading style sheets.     iv) None of the above.  

g) Which of the following is not?  
   i) HTML     ii) XML     iii) PostScript     iv) JavaScript  

h) DOM is an abbreviation of ____________.  
   i) External style sheets are stored as an external file with ________ extension.  

j) Write the full form of cascading style sheets.  

UNIT-I  

Q.2 What are cascading styles? Explain its types with examples.  

Q.3 Explain conditional and cooping structures in JavaScript.  

UNIT-II  

Q.4 Why PHP is so popular? Explain various data types in PHP with an example.  

Q.5 a) What are strings? What are various string functions in PHP?
b) Explain if-statement in PHP.

**UNIT-III**

Q.6  
   a) Differentiate between static and global scope of variables in PHP.  
   b) Explain ‘&this’ variable in PHP.

Q.7  
Design a registration form in HTML and PHP.

**UNIT-IV**

Q.8  
Write short notes on the following: 
   a) Cross join. 
   b) Inner join. 
   c) Self join.

Q.9  
Explain various data manipulation statements in PHP.
End Semester Examination, Dec. 2015  
MCA - Third Semester  
COMPUTER SYSTEM ARCHITECTURE (MCA-3004)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 2

Note: Attempt **FIVE** questions in all; **taking at least ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1 Multiple choice questions:

a) The internal components of the processor are connected by:
   i) Processor intro-connectivity circuitry
   ii) Processor bus
   iii) Memory bus
   iv) RAM bus

b) What is the minimum number of flip-flops required in a counter to count 100 pulses?
   i) Five  
   ii) Seven  
   iii) Ten  
   iv) Hundred

c) The unit which decodes and translates each instruction and generates the necessary enable signals for ALU and other units is called:
   i) Arithmetic unit  
   ii) Logical unit  
   iii) Control unit  
   iv) CPU

d) A ________ is a digital circuit that performs the inverse operation of decoder.
   i) Multiplexer  
   ii) Adder  
   iii) Subtractor  
   iv) Encoder

e) The addressing mode, where you directly specify the operand value is:
   i) Immediate  
   ii) Direct  
   iii) Definite  
   iv) Relative

f) __________ is a single address space for storing both memory and I/O devices.
   i) Memory mapped I/O  
   ii) Isolated I/O  
   iii) Separate I/O  
   iv) Optimum I/O

g) The DMA transfer technique where transfer of one word data at a time is called:
   i) Cycle stealing  
   ii) Memory stealing  
   iii) Hand-shaking  
   iv) Inter-leaving

h) A stack-organised computer uses instruction of:
   i) Indirect addressing  
   ii) Two addressing  
   iii) Zero-addressing  
   iv) Index addressing

i) Cache memory enhances:
   i) Memory capacity  
   ii) Memory access time  
   iii) Secondary storage capacity  
   iv) Secondary storage access time

j) The pipeline process is also called:
   i) Superscalar operation  
   ii) Assembly line operation  
   iii) Von Neumann cycle  
   iv) None of the above

1½x10

**UNIT-I**
Q.2 What do you understand by a flip-flop? Explain different types of flip-flops in brief. 15

Q.3 Simplify the following Boolean function in product of sum form by means of a four variable map:
   i)  \( F(w, x, y, z) = \pi(2, 3, 4, 5, 7, 12, 14) \)
   ii) \( F(w, x, y, z) = \pi(1, 3, 5, 8, 11, 13) \) 15

UNIT-II

Q.4 Explain different types of addressing nodes with example of each. 15

Q.5 What is an instruction? Explain its various parts. Describe instruction cycle in detail. 15

UNIT-III

Q.6 What are the three modes of transfer? Explain them in detail. 15

Q.7 What are the various ways of asynchronous data transfer? Explain in detail. 15

UNIT-IV

Q.8 Explain Flynn’s classification of computers. Describe four segment instruction pipelines with an example. 15

Q.9 Write short notes on:
   a) Interleaved memory organization.
   b) Reservation table.
   c) Linear pipeline. 5x3
End Semester Examination, Dec. 2015  
MCA - Third Semester  
LINEAR ALGEBRA AND STATISTICAL TECHNIQUES (MCA-3005)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 3

Note: Attempt FIVE questions in all; taking at least ONE question from each Unit. Q.1 is compulsory. All questions carry equal marks.

Q.1  
a) What is standard basis for $V_3$?  
b) Which of the following is not a linear transformation?  
   i) rotation  
   ii) projection  
   iii) reflection  
   iv) translation  
c) What is rank of the following matrix?  
\[
\begin{bmatrix}
0 & 1 & 2 & 5 & 8 \\
0 & 0 & 1 & 2 & 0 \\
0 & 0 & 0 & 1 & 4 \\
0 & 0 & 0 & 0 & 0
\end{bmatrix}
\]
d) What are the eigen values of $A^3$ if:  
\[
A = \begin{bmatrix}
2 & 0 & 0 \\
1 & 2 & 0 \\
3 & 4 & 8
\end{bmatrix}
\]
e) State Cayley-Hamilton theorem.  
f) State addition law of probability.  
g) Write expression for regression line of $X$ on $Y$.  
h) If $Z$ is standard normal variate, find $P(0.81 \leq Z \leq 1.73)$  
i) Define coefficient of correlation.  
j) Define $X^2$.  

UNIT-I

Q.2  
a) Find the matrix of the reflection of $IR^3$ about the line $y = x$.  
b) Find the rank of the following matrix by reducing it to row-reduced-echelon form:  
\[
\begin{bmatrix}
2 & 3 & -1 & -1 \\
1 & -1 & -2 & -4 \\
3 & 1 & 3 & -2 \\
6 & 3 & 0 & -7
\end{bmatrix}
\]

Q.3  
a) Determine the value of $\lambda$ for which the following equations have non-trivial solution:
\[\begin{align*}
x + 2y + 3z &= \lambda x \\
3x + y + 2z &= \lambda y \\
2x + 3y + z &= \lambda z
\end{align*}\]

b) Show that the following system of linear equations is not consistent:
\[\begin{align*}
x + y + z &= -3 \\
3x + y - 2z &= -2 \\
2x + 4y + 7z &= 7
\end{align*}\]

UNIT-II

Q.4 a) Using Cayley-Hamilton theorem, find \( A^{-1} \) if:
\[
A = \begin{bmatrix}
13 & -3 & 5 \\
0 & 4 & 0 \\
-15 & 9 & 7
\end{bmatrix}
\]

b) Diagonalize the matrix:
\[
A = \begin{bmatrix}
8 & -6 & 2 \\
-6 & 7 & -4 \\
2 & -4 & 3
\end{bmatrix}
\]

Q.5 a) Show that eigenvalues of a Hermitian matrix are all real.

b) Show that the following matrix is orthogonal:
\[
\begin{bmatrix}
\cos \theta & 0 & \sin \theta \\
0 & 1 & 0 \\
-\sin \theta & 0 & \cos \theta
\end{bmatrix}
\]

UNIT-III

Q.6 a) Find the Karl-Pearson coefficient of correlation for the following data:

\[
\begin{array}{c|cccccccc}
X & 55 & 56 & 58 & 59 & 60 & 60 & 62 \\
Y & 35 & 38 & 38 & 39 & 44 & 43 & 45
\end{array}
\]

b) The mean and variance of a binomial variable \( X \) are 2 and 1 respectively. Find the probability that \( X \) takes a value greater than 1.

Q.7 Fit a normal distribution to the following data and test the goodness of fit.

\[
\begin{array}{c|ccccccccccc}
x & 4 & 6 & 8 & 10 & 12 & 14 & 16 & 18 & 20 & 22 & 24 \\
f & 1 & 7 & 15 & 22 & 35 & 43 & 38 & 20 & 13 & 5 & 1
\end{array}
\]

UNIT-IV

Q.8 a) Using graphical method, solve the LPP:

Maximize \( Z = 5x_1 + 3x_2 \)

Subject to the constraints
\[
\begin{align*}
3x_1 + 5x_2 &\leq 15 \\
5x_1 + 2x_2 &\leq 10 \\
\text{and } x_1, x_2, &\geq 0
\end{align*}\]

b) Using simplex method, solve the following LPP:
Minimize \[ z = x_1 - 3x_2 + 2x_3 \]
Subject to the constraints
\[ 3x_1 - x_2 + 2x_3 \leq 7 \]
\[ -2x_1 + 4x_2 \leq 12 \]
\[ -4x_1 + 3x_2 + 8x_3 \leq 10 \]
and \( x_1, x_2, x_3 \geq 0 \)

Q.9

a) Solve the following transportation problem:

<table>
<thead>
<tr>
<th></th>
<th>D_1</th>
<th>D_2</th>
<th>D_3</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>O_1</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>150</td>
</tr>
<tr>
<td>O_2</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>150</td>
</tr>
<tr>
<td>O_3</td>
<td>10</td>
<td>8</td>
<td>4</td>
<td>150</td>
</tr>
<tr>
<td>O_4</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>150</td>
</tr>
<tr>
<td>Requirement</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

b) Solve the following transportation problem:

<table>
<thead>
<tr>
<th></th>
<th>D_1</th>
<th>D_2</th>
<th>D_3</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>O_1</td>
<td>50</td>
<td>30</td>
<td>220</td>
<td>1</td>
</tr>
<tr>
<td>O_2</td>
<td>90</td>
<td>45</td>
<td>170</td>
<td>3</td>
</tr>
<tr>
<td>O_3</td>
<td>250</td>
<td>200</td>
<td>50</td>
<td>4</td>
</tr>
<tr>
<td>Demand</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Q.1 State whether TRUE or FALSE:
   a) A function cannot be defined inside other function.
   b) Function cannot return more than one value at a time.
   c) String in immutable in Java.
   d) Do while loops cannot be noted.
   e) Boolean is a data type in Java.
   f) It is mandatory to declare a class as public.
   g) There can be any number of constructor in a class.
   h) One class can inherit any number of classes.
   i) Moune listener in an interface.
   j) Jdbc stands for Java database connectivity. (Y/N)

UNIT-I

Q.2 Write short notes on:
   a) Protected and default.
   b) Constructor overloading.
   c) ‘+’ operator.

Q.3 a) Discuss in detail the method of creating compiling and executing a Java program.
     b) How is inheritance implemented in Java? How many types of inheritance can be used in Java?

UNIT-II

Q.4 What is a thread? How are threads created in Java? Discuss the concept of thread synchronization using a suitable example.

Q.5 a) What are packages? How packages are created and used?
     b) Explain keywords ‘super’ and ‘thin’ using suitable examples.

UNIT-III

Q.6 a) What in an Applet? How do Applet differ from application?
     b) Explain the input stream and output stream classes and there relevance.

Q.7 Write short notes on:
   a) JButton
   b) JTextField
   c) Gridwidth and Gridheight.
   d) JPasswordField
   e) JLabel

UNIT-IV

Q.8 Explain the various classes associated with JDBC connectivity using a suitable example.
Q.9  a) Explain Servlet life cycle in detail.  
     b) Write a short note on JSP.
End Semester Examination, Dec. 2015
MCA - Fourth Semester
SOFTWARE ENGINEERING AND TESTING (MCA-4002)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt **FIVE** questions in all; **taking at least ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1 **Multiple choice questions:**
   a) Types of integration testing.
      i) Big-Bang
      ii) Bottom-up
      iii) Top-down
      iv) All of the above
   b) Beta testing will be done by:
      i) Developer
      ii) User
      iii) Tester
      iv) All of the above
   c) How severely the bug is effecting the application is called?
      i) Surely
      ii) Priority
      iii) Fixability
      iv) Traceability
   d) Adhoc testing is a part of:
      i) Unit
      ii) Regression
      iii) Exploratory
      iv) Performance
   e) Unit testing will be done by:
      i) Tester
      ii) End user
      iii) Customer
      iv) Developer

   **State whether True or False:**
   f) Bug prevention is the testing first goal.
   g) Audit is a fault in a program.
   h) Test matrix records the relationship between two or more products.
   i) Structural testing looks at the implementation detail.
   j) Test should be conducted for every possible variable.

   **1½x10**

**UNIT-I**

Q.2 a) What are the principles of software engineering? How this is helpful in the development of a software project? 8
    b) Explain prototype model with its advantages and disadvantages. 7

Q.3 a) What are the various problems arises during software development? 5
    b) What are the advantages of software development using component based software engineering? Explain with the help of any real life example. 10

**UNIT-II**

Q.4 a) Draw the data flow diagram for a hospital management system. 7
    b) Differentiate between PERT and GANTT charts. 8

Q.5 Write short notes on:
   a) Modularity.
   b) Coupling.
   c) Cohesion.

   **5x3**

**UNIT-III**

Q.6 a) Write the test cases for quadratic equation using standard format. 8
b) What are the various objectives of testing?

Q.7 What is structural testing? Explain various techniques of structural testing in detail.

UNIT-IV

Q.8 Write short notes on:
   a) UNIT testing.
   b) Integration testing.
   c) System testing.

Q.9 What are the various factors that affects the software quality? Also differentiate between quality assurance and quality control.
Q.1 Multiple choice questions:
   a) Which is used to construct the complex sentences?
      i) Symbols
      ii) Connectives
      iii) Logical connectives
      iv) None of the above
   b) Semantic network presents:
      i) Syntactic relation between concepts
      ii) Semantic relations between concepts
      iii) Both i) and ii)
      iv) Neither i) and ii)
   c) Which of the following is true for neural networks?
      i) The training time depends on the size of the network.
      ii) Neural networks can be simulated on a conventional computer.
      iii) Artificial neurons are identical in operation to biological ones.
         a) All of the above
         b) ii) is true
         c) i) and ii) are true
         d) None of the above.
   d) What does the Bayesian network provide?
      i) Complete description of the domain.
      ii) Partial description of the domain
      iii) Complete description of the problem.
      iv) None of the above.
   e) Fuzzy logic is usually represented as
      i) IF-THEN-ELSE rules
      ii) IF-THEN rules
      iii) Both i) and ii)
      iv) None of the above
   f) In A* approach evaluation function is
      i) Heuristic function
      ii) Path cost from start node to current node.
      iii) Path cost from start node to current node+heuristic cost.
      iv) Average of path cost from start node to current node and heuristic cost.
   g) Which search is equal to minimax search but eliminates the branches that can’t influence the final decision?
      i) DFS
      ii) BFS
      iii) Alpha-beta pruning
      iv) None of the above
   h) One of the main challenges of NLP is:
      i) Handling ambiguity of sentences.
      ii) Handling PoS-Tagging
      iii) Handling Tokenization
      iv) All of the above
   i) Which is also called single inference rule?
      i) Reference
      ii) Resolution
      iii) Reform
      iv) None of the above
   j) Graph used to represent semantic network is:
      i) Undirected graph
      ii) Directed graph
iii) Directed acyclic graph (DAG) iv) Directed complete graph

UNIT-I

Q.2 a) List and discuss two potentially negative effects on society of the development of AI techniques.
   b) In case of hill-climbing problem, what would happen when a state is better than all its neighbours but not so when compared to states that’re further and how would you resolve it?

Q.3 a) Prove that A* is admissible by showing that it fulfills the following conditions:
   i) A* search will terminate.
   ii) During its execution, there is always a node on OPEN that lies on an optimal path to the goal.
   b) Explain breadth-first search algorithm.

UNIT-II

Q.4 Explain various knowledge representation schemes in detail.

Q.5 a) Express the following sentences involving predicates in symbolic form:
   i) All students are clever.
   ii) Some students are not successful.
   iii) Every clever student is successful.
   iv) There are some successful students who are not clever.
   v) Some students are clever and successful.
   b) Make semantic network representation of the following database.

Atom                  Property
Circus-elephant       elephant performer
Elephant              (animal) (head truck)
Head                  mouth
Animal performer       heart
Costume               Cloth

UNIT-III

Q.6 a) Identify and describe two good application areas for expert systems within a university environment.
   b) Explain the concept of rule-based expert system.

Q.7 “Knowledge plays a very important role in NLP”. Justify this statement. Also elaborate the phases of NLP.

UNIT-IV

Q.8 a) Give the structure of biological neuron.
   b) Define Fuzzy set theory. Give operations on Fuzzy sets.

Q.9 What is Bayesian theorem? Make the Bayesian network of the following problem.
Suppose we observe following evidence in a car:
S: The car has starting problem.
H: The headlights are not functioning.
The benefits or hypothesis supporting these evidences can be
N: There is no fuel in the car.
O: The car battery is not properly charged.
P: The headlight bulbs are fuse.
Q.1 Multiple choice questions:

a) Which of the following is not a function of network layer?
   i) Routing
   ii) Inter-networking
   iii) Congestion control
   iv) None of above

b) Which of the following can be a software?
   i) Routers
   ii) Firewalls
   iii) Gateway
   iv) Modems

(c) How many OSI layers are covered in X.25 standard?
   i) Two
   ii) Three
   iii) Seven
   iv) Six

d) Which of the following layer is not in OSI model?
   i) Physical layer
   ii) Internet layer
   iii) Network layer
   iv) Transport layer

e) Bridge works in which layer of OSI model?
   i) Application layer
   ii) Transport layer
   iii) Network layer
   iv) Data link layer

f) Why IP protocol is considered as unreliable?
   i) A packet may be lost.
   ii) Packets may be arrived out of order.
   iii) Duplicate packets may be generated.
   iv) All of the above.

g) In _________ type of service, no connection is established before hand or afterwards:
   i) Unacknowledged connectionless service.
   ii) Acknowledged connectionless service.
   iii) Point-to-point
   iv) Both i) and ii)

h) Error detection at the data link layer is achieved by:
   i) Bit stuffing
   ii) CRC
   iii) Hamming Codes
   iv) Equalization

i) Which of the following devices is a PC component that connects the computer to the network?
   i) Bridge
   ii) NIC
   iii) DNS server
   iv) Gateway

j) Which of the following terms is used to describe a hardware or software based device that protects networks from outside threats?
   i) NIC
   ii) Gateway
   iii) Firewall
   iv) Hub
UNIT-I

Q.2  a) Explain the operation of error correction method. Given a bit pattern 1001010, generate the formula to calculate the redundancy bits and also find out the position of error at receiving end.  
     b) Discuss the frame format of Ethernet.  

Q.3  a) What do you mean by circuit switching? Discuss two types of switches used in circuit switching with suitable diagram.  
     b) Discuss three types of bridges.

UNIT-II

Q.4  a) In HDLC, what is bit stuffing and why is it needed? Explain with suitable examples.  
     b) What do you mean by flow control? Explain stop-and–wait and sliding window protocol with a diagram.

Q.5  Explain the following: 
     a) Difference between static and dynamic LAN.  
     b) Discuss the frame relay protocol with its frame format.

UNIT-III

Q.6  a) Explain various defense models in relation to network security.  
     b) What is denial of service attack? Explain the common method of it and how is it implemented.

Q.7  a) Find all solutions to each of the following linear equations: 
     i) 4x = 4(mod 6)  
     ii) 9x + 4 = 12(mod 7) 
     b) Find the particular and the general solution to the following linear Diophantine equation: 25x + 10y = 15.

UNIT-IV

Q.8  Differentiate symmetric key with asymmetric key algorithms. Explain atleast two symmetric and two asymmetric techniques which are the most commonly used for encryption on the web.

Q.9  Differentiate between the following: 
     a) Symmetric key signature and public key signature.  
     b) Stream and block ciphers.  
     c) DES and AES.
End Semester Examination, Dec. 2015  
MCA - Fourth Semester  
CLOUD COMPUTING (MCA-4007A)

Time: 3 hrs  
Max Marks: 75  
No. of pages: 1

Note: Attempt **FIVE** questions in all; **taking at least ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1 Answer the following questions in one line only:
   a) The term “cloud computing” is a metaphor that originated in ________.
   b) The full form of Iaas is ____________.
   c) Give any disadvantage of cloud.
   d) Write any one important factor which a company should consider before implementing cloud computing technology.
   e) VPN stands for ____________.
   f) SaaS stand for ____________.
   g) There are two types of clouds _________ and _________.
   h) Name any three data types used in cloud computing.
   i) Write layers of cloud computing.
   j) Sky drive is a cloud storage and the provider is ____________. 1½x10

UNIT-I

Q.2 What do you mean by cloud computing? How is it used in information technology field? Also discuss the pros and cons of cloud computing. 15

Q.3 What are the different technologies used in cloud? Discuss your answer with suitable diagrams of cloud computing platform. 15

UNIT-II

Q.4 Explain cloud reference model in detail with the help of suitable diagrams. 15

Q.5 What are the different services provided by cloud computing? Explain all the services with the help of their suitable industry uses in detail. 15

UNIT-III

Q.6 What are the different security issues involved in cloud computing? How your data will be secured on the cloud? Explain. 15

Q.7 What are the different applications of cloud computing? How these applications are making our lives more and more comfortable? 15

UNIT-IV

Q.8 What are the different terms involved in managing and administering the cloud? 15

Q.9 What are the different communication technologies involved with cloud? Explain with the help of suitable examples. 15
Q.1 a) Two methods with the same name and same parameters is called:
   i) Overloading
   ii) Overriding
   iii) Duplexing
   iv) None of the above

b) CLR stands for:
   i) Common language runtime
   ii) Created language runtime
   iii) C# language runtime
   iv) None of the above

c) ADO.NET is used to:
   i) Access remote computers
   ii) Access hardware
   iii) Access databases
   iv) None of the above

d) Multiple inheritance is not possible in C#.
   i) True
   ii) False

e) Are Private class level variables inherited?
   i) True
   ii) False

f) Try is used for:
   i) Monitoring the exception prove block
   ii) Trying the logic of program
   iii) Throwing the exception
   iv) None of the above

g) Properties can be overloaded:
   i) True
   ii) False

h) _______ method is used to populate a datanet:
   i) Fill
   ii) Populate
   iii) Get
   iv) None of the above

i) It is possible to use simple HTML tags in aspx files:
   i) True
   ii) False

j) .Net code can be written in C# or VB:
   i) True
   ii) False

UNIT-I

Q.2 Write short notes on:
   a) CLS
   b) IL
   c) Barre class library
   d) Type safety
   e) ILDSAM

UNIT-II

Q.3 a) What are name spaces? How are they declared and used in C#?
   b) Explain how garbage collection is helpful in writing managed codes.

UNIT-II

Q.4 a) What is an array? What are the different types of arrays available in C#?
   b) What is the difference between runtime and compiletime polymorphism?
Q.5 Write short notes on:
   a) Delegates
   b) Interface
   c) Indexers

**UNIT-III**

Q.6 Explain the architecture of ADO.NET in detail. Explain the importance of each component using a suitable example.

Q.7 a) Write a program to demonstrate connectivity to SQL server.
    b) Differentiate between connected and disconnected methods of querying.

**UNIT-IV**

Q.8 Write short notes on:
   a) TextBox
   b) Bottom
   c) Form
   d) Label
   e) Drop-down list

Q.9 a) How are events handled in ASP.NET? Explain with an example.
    c) Explain state management in asp.net with an example.
Q.1 Multiple choice questions:
   a) A snowflake schema is which of the following types of tables:
      i) Fact
      ii) Dimension
      iii) Both i) and ii)
      iv) None of the above
   b) A star schema has what type of relationship between dimension and fact table.
      i) Many-to-many
      ii) One-to-one
      iii) One-to-many
      iv) None of the above.
   c) Which one manages both current and historic transactions?
      i) OLTP
      ii) OLAP
      iii) XML
      iv) None of the above.
   d) The synonym for data mining is:
      i) Data warehouse
      ii) KDD
      iii) ETL
      iv) None of the above.
   e) A business intelligence system requires data from:
      i) Data warehouse
      ii) Operational systems
      iii) Database servers
      iv) None of the above.
   f) Data modeling technique used for data marts is:
      i) ER-Model
      ii) Dimensional modeling
      iii) Physical model
      iv) None of the above.
   g) Define confidence.
   h) Define clustering.
   i) Define multi-dimensional rules.
   j) Define OLTP

UNIT-I

Q.2 a) What is Meta data and why is it important? 7½x2
    b) What is data warehouse? What are the goals of a data warehouse? 7½x2

Q.3 a) Suppose that a data warehouse consists of three dimensions time, doctor and patient, and 2 measures count and charge where charge is the fee that a doctor charges a patient for a visit. Draw a schema diagram for the above data warehouse. 10
    b) Discuss various types of OLAP servers. 5

UNIT-II

Q.4 a) Describe the various steps involved in data mining when viewed as a process of knowledge discovery. 8
    b) Describe why concept hierarchies are useful in data mining. 7

Q.5 a) Discuss the various method for data cleaning. 7½x2
    b) Discuss the issues to be considered during data integration. 7½x2

UNIT-III
Q.6 Find all frequent itemsets for following database using Apriori algorithm. (Min-sup=2)

<table>
<thead>
<tr>
<th>TID</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>a, b, e</td>
</tr>
<tr>
<td>2.</td>
<td>b, d</td>
</tr>
<tr>
<td>3.</td>
<td>b, c</td>
</tr>
<tr>
<td>4.</td>
<td>a, b, d</td>
</tr>
<tr>
<td>5.</td>
<td>a, c</td>
</tr>
<tr>
<td>6.</td>
<td>b, c</td>
</tr>
<tr>
<td>7.</td>
<td>a, c</td>
</tr>
<tr>
<td>8.</td>
<td>a, b, c, e</td>
</tr>
<tr>
<td>9.</td>
<td>a, b, c</td>
</tr>
</tbody>
</table>

Q.7 a) What do you mean by decision trees? Explain.
    b) Write a short note on correlation analysis.  

UNIT-IV

Q.8 Write short notes on:
    a) Mining text database.
    b) Big data.  

Q.9 What is spatial database management system? Explain in detail.
End Semester Examination, Dec. 2015
MCA - Fifth Semester
PROGRAMMING IN UNIX (MCA-5003)

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt **FIVE** questions in all; **taking at least ONE question** from each Unit. **Q.1 is compulsory.** All questions carry equal marks.

Q.1 **Fill in the blanks:**
   a) The default system wide permissions for a file are _________ and that for a directory are _________.
   b) _________ is a popular terminal emulation software.
   c) _________ command will display the calendar of the month in which you born.
   d) _________ command will display all the processes running in your system.
   e) _________ is a system process whose Pid is 1.

**State whether the following statements are True or False:**
   f) We cannot submit a new job for printing unless our earlier job has been printed.
   g) Shell variables are case sensitive.
   h) While executing a shell script, the shell acts as a compiler.
   i) The break statement is used to exit from an if statement only.
   j) Grep command is used to store the content in a file.

1½x10

**UNIT-I**

Q.2 a) What are the characteristics of a Unix file system?
   b) What do you mean by multitasking multiuser operating system?
   c) Differentiate between hard link and soft link.

5

Q.3 a) How Unix supports security and privacy? Illustrate through a suitable example.
   b) Explain any three directory related commands with a suitable example.

10

**UNIT-II**

Q.4 Write commands for the following:
   a) Merge the contents of file F1 with the input supplied from the keyboard and store he sorted output in a file F2.
   b) Search all lines in a file which do not end with a semi colon.
   c) Convert all capital letters in a file to small case letters.
   d) Output of whom should be sorted and displayed on the screen along with the total number of users. The same output except the number of users should also be stored in a file file1.
   e) How will you forcibly remove a file to which you don’t have write permission?
   f) Delete interactively all files.

2½x6

Q.5 a) What is the difference between scheduling processes using batch command and using at command.
   b) Write commands for the following:
      i) List all files beginning with the character ‘P’ on the screen and also store them in a file called file 1.
      ii) Contents of file 1 and file 2 should be displayed on the screen and this output should be appended to the file 3.
iii) Search all lines in a file which do not end with a semicolon.
iv) Merge and sort the contents of files a, b and c and display the sorted output on the screen.

UNIT-III

Q.6 Write a shell script which will check whether the path entered by user contains directory or a file. If it is directory, go into the directory and delete all the files in that directory. If it is a file, give error message and stop execution of a program. 15

Q.7 Write a shell script which will check whether the login name passed at command prompt exist or not. If the login name exist then check whether it has password or not and if user does not exist then display proper message. 15

UNIT-IV

Q.8 What do you understand by client server architecture? How is this architecture implemented in UNIX? Relate client server architecture with TCP and state the advantages and disadvantages? 15

Q.9 Explain the following in relation to TCP sockets:
a) Bind
b) Listen
c) Accept
d) Fork
e) Exec
f) Socket function. 15
Q.1 Choose the correct option:

a) Self join.
   i) Join two copies of same table.
   ii) Join two copies of different table.
   iii) Copies the table.
   iv) None of the above.

b) Embedded SQL statements include:
   i) Define and open.
   ii) Declare.
   iii) Execute.
   iv) All of the above.

c) In a homogeneous system all sites use:
   i) The same DBMS product.
   ii) Different DBMS product.
   iii) Both are incorrect.
   iv) No DBMS product.

d) In centralized DBMS the reliability and availability are:
   i) Low.
   ii) High.
   iii) Moderate.
   iv) Depends.

e) PL/SQL is a ________ of SQL statements.
   i) Subset.
   ii) Superset.
   iii) Powerset.
   iv) None of the above.

f) The Varchar and data type is used to store:
   i) Variable length character data.
   ii) Fixed length character data.
   iii) Depends.
   iv) both i) and ii).

g) Exception can be declared only in the:
   i) Begin.
   ii) Declarative.
   iii) Anywhere in the PL/SQL block.
   iv) None of the above.

h) Function will return value by using ________ statement.
   i) IN
   ii) OUT.
   iii) RETURN.
   iv) INOUT.

i) What are the following ways to handle errors?
   i) Trap.
   ii) Propagate.
   iii) Both i) and ii).
   iv) None of the above.

j) Trigger is a database object that can be called explicitly like procedure/ function:
   i) True.
   ii) False.  

UNIT-I

Q.2 Discuss the advantages and disadvantages of DDBMS and also explain its architecture.  

Q.3 What is meant by query processing? Explain different phases of query processing.  

UNIT-II

Q.4 What do you mean by join? Explain various types of join with an example.  

Q.5 Explain the following:
a) Group by clause.
b) Views.
c) Union clause.
d) Grant.
e) Distinct.

UNIT-III

Q.6 Discuss the architecture of PL/SQL and write a PL/SQL code to find the factorial of any number.

Q.7 a) What is the importance of cursor? What are its types? Explain.
b) What is the importance of RETURN statement in function? Discuss.

UNIT-IV

Q.8 What do you mean by object oriented database management system? What is the need of it and also explain its architecture?

Q.9 What do you mean by cloud computing? Discuss its service models in detail and also explain cloud storage.
End Semester Examination, Dec. 2015  
MCA - Fifth Semester  
SOFTWARE PROJECT MANAGEMENT (MCA-5005 (B))

Time: 3 hrs
Max Marks: 75
No. of pages: 2

Note: Attempt \textit{FIVE} questions in all; \textit{taking at least ONE question} from each Unit. \textbf{Q.1 is compulsory.} All questions carry equal marks.

**Q.1**

a) Which type of risk factor is most likely to cause problems for a software project developing commercial software?
   i) Inadequate user documentation.
   ii) Litigation expense.
   iii) Low productivity.
   iv) Cancellation of project.

b) Defect prevention is defined as ______________.

c) Product quality is also known as ____________.

d) Which of the following is not a main reason to undertake software quality assurance activities?
   i) Reduce software personnel turnover.
   ii) Legal liability.
   iii) Marketing reasons.
   iv) Insistent by the user on a satisfactory quality assurance program.

e) Define productivity of a project.

f) ___________ type of risk factor is most likely to cause problems for a software project which develop military software?

g) Setting of coding standards is the main goal of quality assurance. (\textit{True}/\textit{False})

h) Software interoperability is ______________.

i) Which of the following statement is NOT true?
   i) An indirect measure focuses on attributes of a project which can be measured by examining a process, product or resource.
   ii) External attributes are always measured indirectly.
   iii) Lines of code is a direct measurement.

j) Define software metrics.  \hspace{10cm} 1\frac{1}{2}x10

**UNIT-I**

Q.2 Propose how the effective use of project management can help an organisation to manage its projects throughout each stage of the project life cycle. \hspace{5cm} 15

Q.3 Define software metrics. How do one establish a S/W metrics program? What is the metrics for a small organization? \hspace{5cm} 15

**UNIT-II**

Q.4 Draw the overview of step wise planning activities and explain its steps. \hspace{5cm} 15

Q.5 Discuss the process of software estimation process. State their purpose and significance. \hspace{5cm} 15

**UNIT-III**

Q.6 What is project schedule? Explain the stages of project schedule. \hspace{5cm} 15

Q.7 Explain the categories of risk framework. \hspace{5cm} 15
UNIT-IV

Q.8 How does quality relate to S/W? What are the different approaches adopted for quality management? 

Q.9 Write short notes on:
   a) Quality control Vs. quality assurance.
   b) Quality process planning.