End Semester Examination, Dec. 2017
BCA – Third Semester
PRINCIPLES OF MANAGEMENT (BCA-001 (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 Answer the following in brief:
   a) Can management be treated as a process? Give reasons.
   b) Differentiate between Management and Administration.
   c) Explain any four roles of manager.
   d) Explain the three levels of a management.
   e) "Staffing is a part of human resource management." Comment on the given statement.
   f) Explain 'span of control'.
   g) Explain 'Job Analysis'.
   h) Explain 'Team spirit'.
   i) Discuss in brief the various steps in organizing process.
   j) Enlist any five qualities of a successful leader. **2×10**

PART-A

Q.2 What is the significance of decision making? Discuss the various types of decisions. What procedures should be followed in arriving at correct decision? **20**

Q.3 a) Differentiate between the following:
      i) Training and development.
      ii) Formal organization and informal organization. **10**
   b) Explain in detail, the importance of planning in the present Indian business
      environment. **10**

Q.4 a) Define social responsibility. Why should it be the responsibility of business to look after the interest of the community? **10**
   b) What is departmentation? Describe the various bases for departmentation. **10**

PART-B

Q.5 Write short notes on *(any four)* of the following:
   a) PERT.
   b) CPM.
   c) Gantt Chart.
   d) Entrepreneurship.
   e) Team Building. **5×4**

Q.6 a) Explain 'Maslow's need hierarchy theory'. How does it differ from ERG theory? **10**
   b) What is computer based MIS? Discuss the various advantages and disadvantages of MIS. **10**

Q.7 a) Discuss the importance of 'Time'. Describe the various techniques used for time management.   **10**
     b) Write short notes on:
        i) Performance appraisal.
        ii) Leadership.   **5×2**

End Semester Examination, Dec. 2017
BCA – Third Semester
PRINCIPLES OF MANAGEMENT (BCA-001 (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 Answer the following in brief:
     a) Can management be treated as a process? Give reasons.
     b) Differentiate between Management and Administration.
     c) Explain any four roles of manager.
     d) Explain the three levels of a management.
     e) "Staffing is a part of human resource management." Comment on the given statement.
     f) Explain 'span of control'.
     g) Explain 'Job Analysis'.
     h) Explain 'Team spirit'.
     i) Discuss in brief the various steps in organizing process.
     j) Enlist any five qualities of a successful leader.   **2×10**

PART-A

Q.2 What is the significance of decision making? Discuss the various types of decisions. What procedures should be followed in arriving at correct decision?   **20**

Q.3 a) Differentiate between the following:
        i) Training and development.
        ii) Formal organization and informal organization.   **10**
     b) Explain in detail, the importance of planning in the present Indian business
        environment.   **10**

Q.4 a) Define social responsibility. Why should it be the responsibility of business to look after the interest of the community?   **10**
     b) What is departmentation? Describe the various bases for departmentation.   **10**

PART-B

Q.5 Write short notes on *(any four)* of the following:
     a) PERT.
     b) CPM.
     c) Gantt Chart.
     d) Entrepreneurship.
     e) Team Building.   **5×4**

Q.6 a) Explain 'Maslow's need hierarchy theory'. How does it differ from ERG theory? **10**

b) What is computer based MIS? Discuss the various advantages and disadvantages of MIS. **10**

Q.7 a) Discuss the importance of 'Time'. Describe the various techniques used for time management. **10**

b) Write short notes on:
i) Performance appraisal.
ii) Leadership. **5×2**

End Semester Examination, Dec. 2017

BCA – Third Semester

LEADERSHIP AND ORGANISATIONAL BEHAVIOUR (BCA-002(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**. Marks are indicated against each question.*

Q.1 Choose the correct answer:
a) Leaders are:
    i) individual people, while leadership is a process.
    ii) the first step in the leadership process.
    iii) individual people who study the leadership process.
    iv) the final step in the leadership process. **2**
b) Trait theory helps explain why:
    i) some people are leaders.
    ii) some people are not leaders.
    iii) successful leaders are effective.
    iv) leadership involves extraversion. **2**
c) Which leadership style tends to centralize authority and make unilateral decisions?
    i) cultural style.
    ii) autocratic style.
    iii) democratic style.
    iv) laissez-faire. **2**
d) Jared's boss encourages employees to participate in the decision-making process but does not give them complete freedom to do as they like. She has this of leadership style.
    i) monarchial.
    ii) autocratic.
    iii) laissez-faire.
    iv) democratic. **2**
e) The theory states a manager's choice of organizational structures and control systems depends on characteristics of the external environment:
    i) mechanistic.
    ii) management science.
    iii) organic.
    iv) contingency. **2**
f) Scientific management, administrative management, and bureaucratic management belong to the management viewpoint known as the:
    i) classical perspective.
    ii) behavioral perspective.
    iii) quantitative perspective.

iv) systems perspective. **2**
- g) Which of the following is the 'odd one out'?
    - i) management science.
    - ii) management accounting,
    - iii) operations management.
    - iv) systems management. **2**
- h) The _____ leadership style is an expression of the leader's trust in the abilities of his subordinates:
    - i) participative.
    - ii) delegative.
    - iii) authoritarian.
    - iv) all of the above. **2**
- i) Feature(s) of Maslow's need hierarchy theory is (are):
    - i) theory of human motives.
    - ii) classifies basic human needs in a hierarchy.
    - iii) theory of human motivation.
    - iv) all of the above. **2**
- j) The philosophy that guides an organization's policies towards its employees and customers is an important part of
    - i) management strategy.
    - ii) organization behavior.
    - iii) organizational culture.
    - iv) organization development. **2**

PART-A

Q.2 a) Define 'Leadership'. How can leadership be developed? **10**
     b) What are the five basis of power of leadership? **10**

Q.3 a) Differentiate Management from Leadership. **10**
     b) Elaborate your leadership style. What are the basic traits a leader should have? **10**

Q.4 a) Mention various trait and behavioral theories of leadership. **10**
     b) Write short notes on any two of the following:
     - i) Situational and contingency theories of leadership.
     - ii) Functional Leadership theory.
     - iii) Information processing Leadership theory.
     - iv) Self leadership theory.
     - v) Transactional and Transformational theory of leadership. **5×2**

PART-B

Q.5 a) What are the major functions of the manager in an organization? **10**
     b) Discuss the challenges and opportunities for organizational behavior. **10**

Q.6 a) What are Forces for and Resistances to change in an organization? **10**
     b) Mention the various types of change in an organization. **10**

Q.7 a) State Maslow's hierarchy of needs in an organization and its limitations.**10**
     b) State Herzberg Two-Factor Theory of Motivation. **10**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
E-COMMERCE (BCA-004(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 is the most realistic relationship between e-commerce and e-business?**
   i) *E-business is a subset of* **e**-*commerce.*
   ii) *E-commerce has* **no** *overlap with e-business.*
   iii) *E-commerce is a different name for e-business.*
   iv) *E-commerce is a subset of e-business*
   v) *None of the above.*

b) **A computer system that permits multiple users to run programs at same time.**
   i) Real time system.   ii) Multi programming system.
   iii) Time sharing system.   iv) Multi-tasking system.

c) In which category of website t**he Amazon site belongs?**
   i) *Brand-building website.*   ii) *Relationship-building website.*
   iii) *Media or publisher site.*   iv) *Transactional website.*
   v) *All of the above.*

d) **Digital Signature is:**
   i) Scanned Signature on Computer.
   ii) Code number of the sender.
   iii) Public Key Encryption.
   iv) Software to recognize signature.

e) **An e-business that allows consumer to name their own price for products and services is following which e-business model?**
   i) B2B   ii) B2G   iii) C2C   iv) C2B

f) **The method(s) of payment for online consumers is/are:**
   i) Electronic cash.   ii) Credit/debit.
   iii) Electronic check.   iv) All of the above.

g) **In the e-commerce security environment, which of the following constitutes the inner-most layer?**
   i) *People.*
   ii) *Data.*
   iii) *Technology solutions.*
   iv) *The digital product delivery.*
   v) *Internet business model.*

h) **Which** *of* **the following is a cost efficiency** *driver* **for** *e*-**business?**

i) *Increasing speed with which goods can be despatched.*
ii) *Reduced sales and marketing costs.*
iii) *Reduced operating costs.*
iv) *Increasing speed with which supplies can be obtained.*
v) *All of the above.*

i) **An example of a cost-savings benefit from creating an *e*-commerce website is:**
   i) *Tracking of number of customers using different parts of site.*
   ii) *The ability to reach overseas markets without a sales presence.*
   iii) *Lower paper costs needed for marketing and fewer staff* **needed** *in contact centre.*
   iv) *More rapid response to customer enquiries.*
   v) *All of the above.*

j) *A* **collection of web services which facilitate certain behaviours online such as community participation and user generated content, rating and tagging is commonly known as:**
   i) *Facebook.*   ii) *World Wide Web.*
   iii) *Web 2.0 concept.*   iv) Customer journey   **2×10**

PART-A

Q.2 a) What do you understand by the term E-Commerce? Explain the different drivers of E-Commerce. **10**

b) Elaborate on the 4 C's of E-commerce (Convergence, Collaborative Computing, Content Management and Call Center). **10**

Q.3 a) What are the different ways for E-Payment systems? **10**

b) Why EFT has become so common these days? Explain by giving its benefits. **10**

Q.4 Elaborate on Security Schemes in Electronic Payment Systems. **20**

PART-B

Q.5 a) Draw the block diagram of the components of B2B. **10**

b) Mention the potential gains and risks in B2B exchanges **10**

Q.6 a) Where do we find the real usage of Knowledge engineering and data warehouse? **10**

b) Elaborate ERP features and its capabilities. **10**

Q.7 a) Discuss various issues in Digital Economy and Success Factors in E commerce economically. **10**

b) How can E-commerce be used effectively in small companies and virtual communities? **10**

End Semester Examination, Dec. 2017
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.1is compulsory.** *Attempt any* **TWO** *questions from* **PART-A** *and* **TWO** *questions from* **PART-B**. *Each question carries equal marks*

Q.1 **Answer the following:**
  a) CRT is a form of:
     i) Keyboard   ii) Mouse   iii) Monitor   iv) Mother board.
  b) Which of the following does not store data permanently?
     i) ROM   ii) RAM   iii) Floppy Disk   iv) Hard Disk.
  c) Which of the following is the smallest storage?
     i) Megabyte   ii) Gigabyte   iv) Terabyte   v) None of these.
  d) Discuss the advantages of first generation of computer.
  e) Write short note on compiler.
  f) CPU stands for _____.
  g) Laser is a type of _____.
  h) Give two examples of system software.
  i) Name the symbols of flowchart.
  j) Write short note on linkers.
     2x10

PART-A

Q.2 Define computer. Explain the characteristics and components of computer and also discuss the various generations of computers with its merits and demerits.   **20**

Q.3 Explain the following:
  a) Magnetic Disk.
  b) Types of ROM.
  c) Non Impact Printers.
  d) Flash Memory.
     5x4

Q.4 a) Solve the following:
     i) $1AC_{16} = ?_{10}$

ii) $(11001)_2 = ?_{10}$

iii) $(101110)_2 = ?_8$

iv) $(562)_8 = ?_{16}$

v) $(ABC)_{16} = ?_2$

3x5

b) Discuss the classification of computer.
　　5

PART-B

Q.5　a) What is system software? Differentiate between compiler, assembler and interpreter.　　**10**

　　b) What is an error? Discuss various types of errors.
　　　　10

Q.6　What is a flowchart? Describe all the symbols of flow chart and prepare an algorithm and draw the flow-chart of greatest of three numbers.
　　　　20

Q.7　Explain the following:
　　a) Pseudocode.
　　b) Decision Table.
　　c) Structured Programming.
　　d) Debugging.
　　　　5x4

End Semester Examination, Dec. 2017

BCA — First Semester

COMPUTER FUNDAMENTALS AND PROGRAMING IN 'C' (BCA-101)

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. *Marks are indicated against each question.*

Q.1   Answer the following:
   a) List the components of computer hardware.
   b) List same areas where computers are used.
   c) What is a device driver?
   d) Name an application where computer vision is used.
   e) Name same applications when you can use a touch screen.
   f) Name three kinds of control structures.
   g) What is the difference between syntax error and semantic error?
   h) What is the difference between primary and secondary memory?
   i) What is the use of ? operator?
   j) What is the difference between $'='$ and $'=='$?
   1½x10

UNIT-I

Q.2   Give differences between the following:
   a) Input Unit and Output Unit.
   b) Impact Printers and Non-Impact Printers.
   c) Physical Mouse and Optical Mouse.   **5x3**

Q.3   Explain briefly the use of computers in the following areas:
   a) Education.
   b) Advertising.
   c) Government.   **5x3**

UNIT-II

Q.4   Explain briefly the working of the magnetic tape. What is the significance of track and frame in a Magnetic Tape?
15

Q.5   a) What is the meaning of volatile memory? Also, give an example of volatile memory.
b) List the features of DRAM Memory Chip.
c) How are these different   PROM, EPROM and EEPROM?
5x3

UNIT-III

Q.6   Create an infinite for loop. Check each value of for loop. If the value is odd, display it, otherwise continue with iterations. Print even numbers from 1 to 100. Use break statement to terminate the program.
15

Q.7   What is a loop? Why it is necessary in the program? How do you choose between while and for loop? Explain with the help of suitable example.
15

UNIT-IV

Q.8   What is the relation between an array name and an element number? How elements are referred, using base address? Also, explain multi-dimensional array?   **15**

Q.9   Write a program to enter five numbers using array and rearrange the array in the reverse order. For example – number enters are 1 2 8 4 7 and after arranging array elements must be 7 4 8 2 1.
15

End Semester Examination, Dec. 2017
BCA - First Semester
ELEMENTS OF MATHEMATICS (BCA-102 (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) Find AB if $A = \begin{bmatrix} 1 & 3 \\ 2 & 1 \end{bmatrix}, B = \begin{bmatrix} 4 \\ -1 \end{bmatrix}$.

b) Construct 2x2 matrix $A = [a_{ij}]$ whose elements are given by $a_{ij} = i + j$.

c) Find the value of a, b, c, d from the matrix $\begin{bmatrix} a+3 & 2b-8 \\ c+1 & 4d-6 \end{bmatrix} = \begin{bmatrix} 0 & -6 \\ -3 & 2d \end{bmatrix}$.

d) Evaluate: $P(18, 2)$

e) Evaluate: $\log\sqrt{8}/\log 8$

f) Evaluate: $\sin 50 \cos 10 + \cos 50 \sin 10$

g) Differentiate w.r.t. $X : -5x^3 + 8x^2 - 7x + 10$.

h) Find $\lim_{x \to 2} \dfrac{x^2 + 3x + 5}{x + 2}$.

i) Find the value of $10^{150} \div 10^{146}$.

j) Find x if $17^{3.5} \times 17^x = 17^8$.   **2×10**

PART-A

Q.2   a) Show that $A = \begin{bmatrix} 5 & 3 \\ -1 & -2 \end{bmatrix}$ satisfies the equation $x^2 - 3x - 7 = 0$ and hence find A^{-1}.

b) Using Cramer's rule solves the following system of equations:

$6x + y - 3z = 5$

$x + 3y - 2z = 5$

$2x + y + 4z = -8$

10×2

Q.3   a) If $3^{x-y} = 27$ and $3^{x+y} = 243$, then find the value of x and y.   **10**

b) If x is positive number and equal to $\sqrt{6 + \sqrt{6 + \sqrt{6 + \ldots}}}$, where the given expression extends to an infinite number of roots, then what is the value of X?   **10**

Q.4   a) How many 3 digits odd numbers can be formed from the digit 1, 2, 3, 4, 5, 6 when?
  i)   Repetition of digits is not allowed.
  ii) Repetition of digits is allowed.   **10**

b) Find the coefficients of x^4 in $\left(x^4 + \dfrac{1}{x^{3}}\right)^{15}$.   **10**

PART-B

Q.5   a) Prove that: $\sin A(1 + \tan A) + \cos A(1 + \cot A) = \sec A + \cos ecA$.   **10**

b) Prove that $\cos 20 \cos 40 \cos 60 \cos 80 = \dfrac{1}{16}$.   **10**

Q.6   a) If $y = x + \sqrt{x \le 1}$ prove that $(y - x)\dfrac{dy}{dx} - y = 0$.   **10**

b) For what value of k is the following function continuous at $x = 2$.

$f(x) = \begin{cases} \dfrac{x^2 - 4}{x - 2} & ; \quad x \ne 2 \\ k & ; \quad x = 2 \end{cases}$ **10**

Q.7   Expand $\sin x$ and $\cos x$ in power of x and hence find cos18° upto four decimal places.   **20**

End Semester Examination, Dec. 2017
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) Define 'infinite set'.

   b) Write down all subsets of {1, 3, 5}.

   c) Write first two terms of the sequences whose n^{th} terms are $\dfrac{n^2}{3^n}$.

   d) $\sin(A+B) = $ _____

   e) Write down the derivative of x^{10} .

   f) Integrate $w.r.t. \ x : x^7$.

g) Evaluate $\underset{x \to 2}{Lim} \dfrac{x^2-4}{x-2}$.

h) Define 'inverse element'.

i) Define 'cartesion product of sets with an example.

j) Define 'ring'. **1½×10**

UNIT-I

Q.2 a) The third term of an A.P. is 25 and the tenth term is -3. Find the first term.
8

b) Let $X = \{1,2,3,4,5\}$ and
$Y = \{1,2,5,6,7,9,10,11,12,13,14\}$

Find the function defined by $f(x) = 2x+3$. Find domain and range. **7**

Q.3 a) Verify $(A \cap B)' = A' \cup B'$ where:
$A = \{2,3,4,5,6\}$ and
$B = \{3,6,7,8\}$ are subsets of $\cup = \{1,2,3,4,5,6,7,8\}$ **8**

b) If $A = \{1,2,4\}$ and $B = \{2,3\}$, what are $A \cap B$ and $A \cup B$. **7**

UNIT-II

Q.4 a) Prove that : $\sqrt{\sec^2 \theta + \cos ec^2\theta} = \tan \theta + \cot \theta$ **7**

b) Prove that: $\sin A(1+\tan A) + \cos A(1+\cot A) = \sec A + \cos ecA$
. **8**

Q.5 a) Evaluate: $\cos 70° \cos 10° + \sin 70° \sin 10°$ **8**

b) Prove that: $2\tan^{-1}\dfrac{1}{3} + \tan^{-1}\dfrac{1}{7} = \dfrac{\pi}{4}$ **7**

UNIT-III

Q.6 a) Differentiate $w.r.t.\ x: (2x+3)^5 (3-x)^4$ **8**

b) If $y = (x^2+1)^2 \sqrt{2x-5}$, find $\dfrac{dy}{dx}$. **7**

Q.7 a) Find second derivatives of:
$ax^3 + bx^2 + cx + d$ **6**

b) If $x = 4z^2 + 5,\ y = 6z^2 + 7z + 3$

Find $\dfrac{d^2 y}{dx^2}$. **9**

UNIT-IV

Q.8 a) Evaluate: $\displaystyle\int \dfrac{x^4+1}{x^2+1} dx$ **8**

b) Solve the following differential equation:
$ydx - xdy = xy\ dx$ **7**

Q.9 Define: Fields and vector spaces with simple examples. **15**

End Semester Examination, Dec. 2017
BCA — First Semester
HARDWARE INTERFACES (BCA-103CB)

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   Answer the following:
  a) MBR stands for _____.
  b) DPI stands for _____.
  c) BIOS stands for _____.
  d) AGP stands for _____.

e) PCI stands for _____.
f) BRD stands for _____.
g) UART stands for _____.
h) CMOS stands for _____.
i) POST stands for _____.
j) Laserjet is a type of _____ printer.   **2×10**

PART-A

Q.2   Name 10 hardware component of a modern day PC. Also, define the working
      of each hardware component.   **20**

Q.3   a) Write the 10 unique features of Intel i9 processor.   **10**
      b) Compare Intel Pentium IV and Celeron processor.   **10**

Q.4   a) Explain the organization of hard-disk. Also, explain the working of each
      component.   **15**
      b) What do you mean by super controller?   **5**

PART-B

Q.5   a) What is bootstrap loader? Write the complete booting sequence.   **10**
      b) Explain the concept of north and south bridge.   **10**

Q.6   a) What are plug-and-play devices? Why these devices are preferred over
      other types of devices?   **10**
      b) Name five types of security threats to computer data.   **5**
      c) List 5 ways by which the security of data can be enhanced.   **5**

Q.7   a) How SMPS helps in protecting the hardware devices?   **10**
      b) Explain the USB architecture.   **10**

End Semester Examination, Dec. 2017
BCA - First Semester
FUNDAMENTALS OF C PROGRAMMING (BCA-104 (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) # include is called _____ directive.
         i) Preprocessor   ii) Inclusion   iii) None of these.
      b) Set of consecutive memory locations is called as _____.
         i) Function   ii) Loop   iii) Array   iv) None of these.
      c) A variable declared outside a function is called _____.

d) Which operators are used to compare the values of operands to produce logical values in C language?
e) Which symbol is used as a statement terminator in C language?
f) The case keyword is followed by integer and _____ values.
g) Name the loop that executes atleast once.
h) What value strcmp ( ) function returns when two strings are same?
i) _____ header file is required when using general utility functions.
j) Define 'variable'.   **2x10**

PART-A

Q.2 a) Write C assignment statements to evaluate the following:

i) Energy=mass$\left[acceleration \times height + \frac{(velocity)^2}{2} \right]$

ii) Frequency $= \sqrt{\frac{1}{LC} - \frac{R^2}{4C^2}}$

iii) root 1 $= \frac{-b + \sqrt{b^2 - 4ac}}{2a}$ **9**

b) Discuss and explain the C program structure and define the 'keywords'.   **11**

Q.3 a) Write a program in C to find factorial on n numbers.   **10**

b) Discuss the format and purpose of the following with examples:
   - nested-if statement
   - While loop   **10**

Q.4 a) Define 'array'. Discuss and explain how two-dimensional arrays are declared and initialized in C with examples.   **15**

b) Write and explain any two string handling functions in brief.   **5**

PART-B

Q.5 a) What is significance of * and & operator? Explain with a suitable example.   **10**

b) Differentiate between the following:
   — static and dynamic memory.
   — calloc ( ) and malloc( )   **10**

Q.6 a) Write a short note on 'recursion'.   **10**

b) Write a short note on 'structure and union'.   **10**

Q.7 a) Write a short note on 'storage classes'.   **10**

b) Explain the following with their syntax, purpose and examples of each:
   i) fprintf ( )
   ii) rewind( )   **10**

End Semester Examination, Dec. 2017
BCA – First Semester
LOGICAL ORGANIZATION OF COMPUTER (BCA-105 (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 Fill in the blanks:
a) Each 8-bit binary group is called a _____.
b) Binary codes are classified as _____ codes and _____ codes.
c) _____ code can, not only detect errors but also correct them.
d) The De Morgan's theorem states that _____.
e) $(11001)_2 - (01101)_2 =$ _____.
f) An n variable k-map can have _____ cellor square.
g) The _____ gate is a basic comparator.
h) A decimal-to-BCD encoder is a _____ line to _____ line encoder.
i) Flip-Flop can store _____.
j) A set of flip-flops used to simply store binary data is called _____. **2×10**

PART-A

Q.2 a) Convert the following:
i) $(163.875)_{10} = ($ $)_2$
ii) $(2056)_8 = ($ $)_{10}$
iii) $(3956)_{10} = ($ $)_8$
iv) $(1011011011)_2 = ($ $)_{16}$
v) $(2EB7)_{16} = ($ $)_{10}$ **2×5**
b) The message 0011011 is coded in the 7-bit Hamming code is transmitted through a noisy channel. Decode the message, assuming that at most, a single error occurred in code word. **10**

Q.3 a) Simplify the following Boolean expressions to a minimum number of literals:
i) $(\bar{A}+C)(\bar{A}+\bar{C})(\bar{A}+B+\bar{C}D)$
ii) $ABC\bar{D}+A+AB\bar{D}+(\bar{D})(\bar{A}\bar{B}\bar{C})$ **5×2**
b) Draw the logic diagram, using only two input NAND gates to implement the following expression:
$F=(AB+\bar{A}\bar{B})(C\bar{D}+\bar{C}D)$ **10**

Q.4 Perform the following using K-map and draw the circuit diagram.
a) $\sum m(5,6,7,9,10,11,13,14,15)$
b) $\sum m(1,3,5,6,7)$ **10×2**

PART-B

Q.5 a) With the help of a logic diagram and a truth table, explain a BCD-to-decimal decoder. **10**
b) Design an Even Parity Bit Generator for a 4-bit input. **10**

Q.6 a) Draw a 4-bit parallel-in, serial-out, shift register. **10**
b) Differentiate between 'synchronous' and 'asynchronous counter'. **10**

Q.7 Write short notes on:
a) Virtual Memory and Cache Memory.
b) Volatile and Non-Volatile Memory. **10×2**

End Semester Examination, Dec. 2017
BCA — Second Semester
DATA STRUCTURE (BCA-201)

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.***
Marks are indicated against each question.

Q.1   State weather the following statements are **TRUE** or *False:*
a) Primitive and non-primitive are the two categories of data structure.
b) There is no beginning and ending of circular queue.
c) Insertion operation in stack is known as pop function.
d) We cannot delete an element from the beginning in a link list.
e) Binary search use divide and conquer policy.
f) A disadvantage of linear probing is the tendency for clustering.
g) Selection sort is better than quick sort in terms of complexity.
h) In array memory is allocated at run time.
i) We get the value in ascending order while we find the preorder traversal of a BST.
j) The number of interchange required to sort 5 numbers in bubble sort is 10.   **1½×10**

UNIT-I

Q.2   Explain following terms:
i)   Time and space complexity.
ii) Address calculation in an array.
iii) Stack.   **5×3**

Q.3   Write a program to implement linear queue using array.   **15**

UNIT-II

Q.4   What do you understand by link list? Explain different application of stack.   **15**

Q.5   Differentiate following:
a) Inorder and preorder traversal.
b) Left threaded and Right threaded tree.
c) Binary tree and binary search tree.   **5×3**

UNIT-III

Q.6   Write an algorithm to implement merge sort.   **15**

Q.7   Sort the following numbers using selection sort:
(11, 30, 46, 35, 15, 19, 82, 25, 41)   **15**

UNIT-IV

Q.8   What do you understand by file organization? Explain basic file operations.   **15**

Q.9   Explain different type of collision handling technique.   **15**

End Semester Examination, Dec. 2017
BCA - Second Semester
MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE (BCA-202)

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　Answer the following:
　　a) State and prove commutative law in Set theory.
　　b) What are the steps to draw a Hasse Diagram?
　　c) What is LHRRWCCs? Give example.
　　d) Define the following:
　　　i)　Directed graph.
　　　ii)　Degree of a vertex.
　　　iii) An edge.
　　e) Write the following set in tabular form:
　　　$A = \{ x : x^2 = 9,\ x\ is\ even \}$

3x5

UNIT-I

Q.2　a) Prove 1+3+5+.........+(2n-1)=n² by mathematical induction $(n \geq 1)$.
　　　8
　　b) 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.
　　　7

Q.3　a) Let P and Q be the relations on
$$P = \{(1, 2),\ (2, 2),\ (2, 3),\ (2, 4),\ (3, 2),\ (4, 2),\ (4, 3),\}$$
　　Set $A = \{1, 2, 3, 4\}$ defined by $Q = \{(2, 2),\ (2, 3),\ (3, 2),\ (3, 3),\ (3, 4),\ (4, 1),\ (4, 2),\}$
　　Find:
　　i)　POP　　　ii) POQ　　　iii) POPOQ　　　　　　　　　**9**
　　b) Find the GCD of 258 and 12 and find the value of (a) and (b) in the following expression:
　　$GCD(258, 12) = 258a + 12b$
　　　　　　　6

UNIT-II

Q.4　a) Draw the Hasse Diagram of Lattice 'D$_{30}$'. Also, find all Boolean sub-algebra of 'D$_{30}$' having atleast four element.
　　　8
　　b) Determine the disjunctive normal form of the following expression:
　　$x \vee (y \wedge z)$
　　　　　　　7

Q.5　a) Discuss various types of Lattices alongwith suitable examples.
　　　8
　　b) If $f(x, y, z) = (x \vee y) \wedge (x \vee \bar{y}) \wedge (\bar{x} \vee z)$ be a given Boolean function, determine its DN form.　　　　　　　**7**

UNIT-III

Q.6　a) Solve the difference equation:
　　$9a_r - 6a_{r-1} + a_{r-2} = 0$ satisfying the conditions $a_0 = 0$ and $a_1 = 2$.　　**8**
　　b) Find the equation of the line passing through (0,-1) and perpendicular to the line joining the points (0, 1) and (3, 5).
　　　7

Q.7 a) Solve the difference equation:
$9a_r - 6a_{r-1} + a_{r-2} = 0$ and find particular solution such that $a_0 = 0$ and $a_1 = 2$. **8**

b) Find the equation of the straight line passing through (3, -5) and parallel to the line joining the points (1, 2) and (-3, 4). **7**

UNIT-IV

Q.8 a) Solve the difference equation $2a_r - 5a_{r-1} + 2a_{r-2} = 0$ and find particular solution such that $a_0 = 0$ and $a_1 = 1$. **8**

b) Find the equation of line through (3, 4) and having slope 5. **7**

Q.9 a) Define the following:
   i) Path length.
   ii) Multigraph.
   iii) Weighted graph.
   iv) Adjacent vertices.
   v) Odd vertex. **2x5**

b) Draw all the spanning trees of the graph (G):
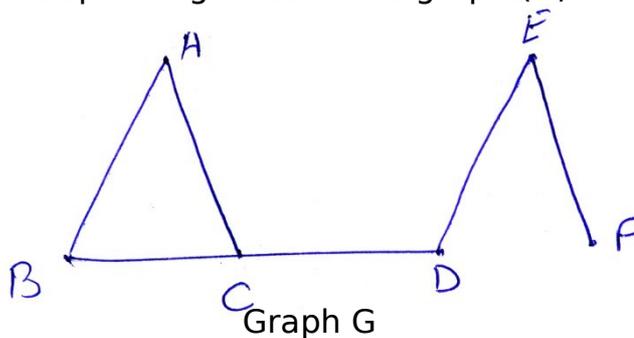
Graph G **5**

Q.10 Find the shortest path between a and z in the graph:

15
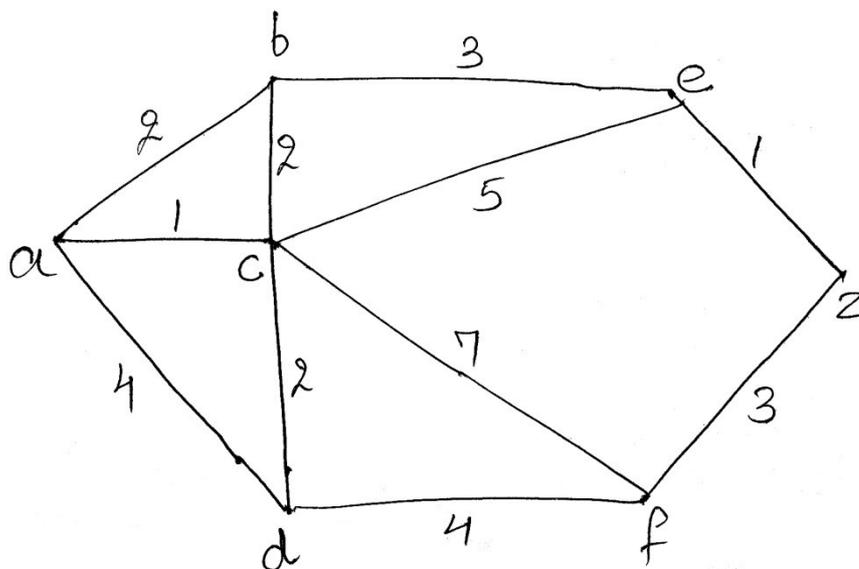
End Semester Examination, Dec. 2017
BCA – Second Semester
DATA STRUCTURES USING 'C' (BCA-203 (CB))

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   Fill in the blanks:
- a) Two non-primitive data types are _____ and _____.   **2**
- b) Information is defined as _____.   **2**
- c) Two examples of non-linear data structures are _____ and _____. **2**
- d) Two applications of stack are _____ and _____.   **2**
- e) Priority queue is defined as _____.   **2**
- f) Explain the term graph.   **2**
- g) BFS stands for _____.   **2**
- h) Draw a complete binary tree.   **3**
- i) Give an example of directed graph.   **3**

PART-A

Q.2   a) Explain the representation of array in memory.   **10**
      b) Explain the linear search algorithm with the help of an example.   **10**

Q.3   a) What is queue? Explain all the operations on queue using suitable examples.   **10**
      b) Sort the following array A using quick sort algorithm.
        A = {44, 33, 11, 55, 77, 90, 40, 60 99, 22, 88, 66}   **10**

Q.4   a) Write a program in 'C' to insert and delete an element at the end of the linked list.   **10**
      b) Convert the following infix expression into its equivalent postfix expression, using stacks:

$$A+\left(B*C-\left(D/E \uparrow F\right)*G\right)*H$$

   10

PART-B

Q.5   a) Explain the term Tree and its representation in memory.   **10**
      b) Explain with the help of an example how an element can be deleted in a Binary Search Tree.   **10**

Q.6   Explain the following terms:
- a) Edge in a graph.
- b) Out-degree of a node in a graph.
- c) In-degree of a node in a graph.
- d) Loop in a graph.   **5×4**

Q.7   Apply and explain each and every step of Bubble Sort algorithm on the following array A:

A = {'P', 'E', 'O', 'P', 'L', 'E'}   **20**

End Semester Examination, Dec. 2017
BCA – Second Semester
PROGRAMMING IN VISUAL BASIC (BCA-203)

Time: 3 hrs.   Max Marks: **75**

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) IDE stands for _____.   **1**
      b) Two disadvantages of using VB are _____.   **2**
      c) A project in VB is saved with the extension _____.   **2**
      d) Two loop statements available in VB are _____ and _____. **1**
      e) Continue statement is used to _____.   **2**
      f) Two examples of string functions are _____ and _____.   **3**
      g) Two important properties of list box are _____ and _____. **2**
      h) DAO stands for _____.   **2**

UNIT-I

Q.2   Explain the following terms:
      a) Tool box.
      b) Tool bar.
      c) Properties window.   **5x3**

Q.3   Explain all the components of VB IDE (Integrated development environment) in detail.   **15**

UNIT-II

Q.4   Differentiate between:
      a) Do statement and for statement
      b) Local variable and global variable.
      c) If statement and if else If statement.   **5×3**

Q.5   Explain five string functions and five mathematical functions available in VB with the help of some examples.   **15**

UNIT-III

Q.6   Write short notes on the following:
      a) Combobox.
      b) Array.
      c) Frame control.   **5×3**

Q.7   Explain in detail the method of creating control array of list boxes.   **15**

UNIT-IV

Q.8 Explain in detail the properties required to be set for DAO to connect a textbox on a VB form to an attribute in a table in MS Access database. **15**

Q.9 Explain all the features of Crystal Report in VB. **15**

End Semester Examination, Dec. 2017
BCA – Second Semester
DATABASE MANAGEMENT SYSTEM (BCA-204 (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) Write the name two types of Data Dictionaries.
     b) What is full form of SQL?
     c) DML stands for _____.
     d) Give an example of derived attribute.
     e) Define 'data independence'.
     f) What is multivalued attribute?
     g) Define 'transitive dependency'.
     h) Differentiate between 'schema' and 'subschema'.
     i) Write a query to retrieve the records from table.
     j) What is deadlock?   **2×10**

PART-A

Q.2 a) Write the following queries using following schema.
        Student (student-Id, student-Name, Address, Gender, Course, Percentage)
        i) Insert five records in student table.
        ii) List all the students who are enrolled in course "BCA"?
        iii) Update the record of student whose roll no is 3 from BCA to MCA.
        iv) Add column "Age" to table.
        v) List the order of students from higher percentage to lower percentage.
            10
     b) Explain three architecture of DBMS.   **10**

Q.3 a) What is Data Dictionary? Differentiate between 'active' and 'passive' Data Dictionary. **5**
     b) Differentiate network, Hierarchical and E-R data model. **15**

Q.4 Write short notes on:
     a) Primary key.
     b) Foreign key.
     c) Union.
     d) Minus.
     e) Intersect.   **4×5**

PART-B

Q.5 What is normalization? Explain 1st, IInd and IIIrd normal forms with suitables.**20**

Q.6 Write short notes on:
     a) Deadlock detection.

b) Lock granularity.
c) Armstrong rules of functional dependency.
d) Query optimization. **5×4**

Q.7 What is distributed database? What are the advantages and disadvantages of using distributed databases? Explain the architecture of distributed databases with suitable diagram. **20**

End Semester Examination, Dec. 2017
BCA – Second Semester
DIGITAL DESIGN AND COMPUTER ORGANIZATION (BCA-204)

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 number of bits in ASCII code is _____.
  b) In _____ number system, 16 distinct symbols are used to specify any number.
  c) The number of rows in a truth table of 4 variables is _____.
  d) If one of the inputs of an EX-OR gate is high, its output will be _____.
  e) A minterm corresponding to don't care condition may have a value _____.
  f) An instruction consists of _____ and _____.
  g) CISC is _____.
  h) Modes of transfer are _____, _____ and _____.
  i) $(110101)_2 = ($_____$)_8 = ($_____$)_{16} = ($_____$)_{10}$
  j) Fastest mode of transfer is _____. **1×15**

UNIT-I

Q.2 Write short notes on:
  a) Interconversion of number system.
  b) Excess-3 codes.
  c) Gray code. **5x3**

Q.3 If the Hamming code sequence 1100110 is transmitted and due to error in one position, is received as 1110110, locate the position of the error bit using parity checks and give the method of obtaining the correct sequence. **15**

UNIT-II

Q.4 What are canonical forms in Boolean expression? Find the other canomical form of $F(A, B, C) = \bar{\Lambda}(1,2,4,5)$. **15**

Q.5 A majority function is generated in a combinational circuit when the output is equal to 1 if the input variable have more I's than O's. The output is O otherwise. Design a three input majority function. Simplify the expression and draw the circuit diagram. **15**

UNIT-III

Q.6 What are addressing modes? Give examples: **15**

Q.7 Write short notes on:
a) Memory hierarchy.
b) Subroutines. **7½×2**

UNIT-IV

Q.8 Differentiate between:
a) I/O and memory bus.
b) Isolated input output and memory mapped input output. **15**

Q.9 What are asynchronous based data transfer? Explain handshaking based data transfer. **15**

End Semester Examination, Dec. 2017
BCA – Second Semester
INTERNET TECHNOLOGIES (BCA-205 (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 ***Fill in the blanks:***
a) To join the internet, the computer has to be connected to a _____.
b) A domain name ending with .org is _____.
c) The name given to a temporary storage area that a web browser uses to store pages and graphics that it has recently used are _____.
d) DNS is _____.
e) The equipment needed to allow home computers to connect to the internet is called a _____.
f) The first network that planted the seeds of internet was _____.
g) _____ programs are automatically loaded and operate as a part of browser.
h) Key logger is a _____.
i) The altering of data so that it is not usable unless the changes are undone is _____.
j) An attempt to make a computer resource unavailable to its intended users is called _____. **1×10**
Write short notes on:
k) HTTP.
l) Harking.
m) Copyright Laws.
n) Hierarchical Routing. **2½×4**

PART-A

Q.2 What are web browsers? Explain the features of a web browser taking example of any browser of your choice. **20**

Q.3 a) Write down the different steps required to create an email account. **10**
b) Are Meta search engines better than traditional search engines? Justify your answer with suitable examples. **10**

Q.4 a) Explain the working of DNS. **10**
b) Explain the DHCP protocol. **10**

PART-B

Q.5 What do you understand by the word "Netiquette"? Explain the common ethical rules which need to be followed on the internet. **20**

Q.6 What is Harking? Explain the various passive and active scanning techniques. **20**

Q.7 a) What are cyber laws? How can they administer cyber security? **10**
b) What are the secure browser settings through which we can protect ourselves from the unauthorized access? **10**

End Semester Examination, Dec. 2017
BCA - Second Semester
WORKSHOP IN EVS (BCA-206)

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**. Each question carries equal marks.*

Q.1 ***Choose the correct option:***
a) Ozone depletion in the stratosphere will cause:
   i) Forest fires   ii) Increased incidence of skin cancer
   iii) Global warming   iv) None of these
b) ***The ozone hole appears in Antarctica during:***
   i) Late winter ii) Peak summer   iii) Early winter   iv) Autumn
c) ***The number of babies produced per thousand individuals is called:***
   i) Natality   ii) Mortality   iii) Immigration   iv) Emigration
d) World Environment Day is celebrated on:
   i) June 01   ii) May 11   iii) June 05   iv) July 11
e) IPCC stands for:
   i) Indian Panel on Climate Change.
   ii) Intergovernmental Panel on Climate Change.
   iii) International Panel on Climate Change.
   iv) None of these.
f) A population is a group of:
   i) Individuals in a species.
   ii) Species in a community.
   iii) Communities in an ecosystem.
   iv) Individuals in a family.
g) Gas leaked in Bhopal gas tragedy:
   i) Potassium isothiocynate.
   ii) Sodium isothiocynate.
   iii) Ethyl isocynate.
   iv) Methyl isocynate.
h) The carrying capacity of a population is determined by:
   i) Population growth rate.   ii) natality
   iii) Mortality   iv) Limiting resources.
i) Human population growth curve is:
   i) Sharped curve.   ii) Parabola curve.

iii) J shaped curve.   iv) Zig zag curve.
j) Lichens are an indicator of:
   i) Air pollution   ii) Water pollution
   iii) Soil pollution   iv) Noise pollution.
   1x10

PART-A

Q.2   Write short note on *(any two)* of the following:
a) Deforestation.
b) Food chain and food web.
c) Biodiversity and megadiversity zones   **5x2**

Q.3   a) Write in detail the soil pollution control methods.   **5**
b) Give an example of a food chain in an aquatic ecosystem (eg. Of pond or river) **5**

Q.4   Define 'endangered species'. What kind of threats to the biodiversity may lead to its loss?   **10**

PART-B

Q.5   Define 'biodiversity'. Explain the threats and causes of loss of biodiversity.
      10

Q.6   Give accounts of *(any two)* of the following:
a) In-situ and ex-situ conservation.
b) Biodiversity at the national and local level.
c) Biogeographical classification of India.   **5x2**

Q.7   Explain the types of disaster with its effects and control measures of:
a) Landslides.
b) Floods.   **5x2**

End Semester Examination, Dec. 2017
BCA - Third Semester
NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES (BCA-301(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   Answer the following:
a) Obtain the value of Median from the following data of the monthly income of 10 employees of a company in Rs:
14391; 15384; 25591; 15407; 16672; 26522, 16777, 26753, 27850; 37490.
b) Find Mode in terms of Median and Mean.
c) Define correlation.
d) The Mean of binomial in 20 and standard deviation is 4. Calculate P and Q.
e) Construct the backward difference table of the following:
X: 0   1   2   3
Y: 1   2   1   10

f) Find absolute error if 1.414 is used as an approximation to $\sqrt{2}$.
g) What do you mean by random sampling?
h) In R.K method of 4th order
     K_3=_____ and K_4=_____.
i) What is probability?

j) The root of equation $x^3 - 2x - 5$ lies between _____.

   2x10

PART-A

Q.2   a) Use Newton Raphson Method to evaluate $\sqrt{2}$ correct to 2 decimal places.
         10

b) Using suitable formula, find $f(0.5)$ and $f(2.5)$ if:
X: 0   1   2   3
f(x)   1   2   1   10   **10**

Q.3   a) Find the missing value of the following table:

X:	45	50	55	60	65
Y:	3	__	2	__	-2.4	**10**

b) Using Eular's Method to solve $\dfrac{dy}{dx} = x + y; \ y(0) = 0$, choosing $n = 0.2$, find $y(1.0)$ **10**

Q.4 a) Fit a straight line if:

X:	1	2	3	4	5
Y:	3	4	6	9	12	**10**

b) Evaluate $\displaystyle\int_0^2 \frac{1}{1+x}dx \ dy$ by:
i) Trapezoidal Rule.

ii) Simpson's $\dfrac{1}{3}^{rd}$ Rule. **10**

PART-B

Q.5 Calculate the Karl Pearson's coefficient of correlation from the following data and interpret its value:

Roll No. of student:	1	2	3	4	5
Marks in Accountancy:	48	35	17	23	47
Marks in statistics:	45	20	40	25	45

20

Q.6 a) The incidence of a certain diseases is such that on the average 20% of workers suffer from it. If 10 workers at random suffer from, find the probability that:
i) Exactly two workers suffer from the diseases.
ii) Not more than two workers suffer from the diseases. **10**

b) Find the Binomial distribution to which mean is 4 and variance is 3. **10**

Q.7 Explain the following:
a) Quota Sampling.
b) Stratified Sampling. **10x2**

End Semester Examination, Dec. 2017
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   Answer the following:

a) Define a Non-singular Matrix.

b) Solve: $^{25}C_{10}$.

c) Give an example of a Diagonal Matrix.

d) What is a Real Sequence?

e) Explain G.L.B.

f) Write Maclaurin's Series.

g) If $^{n}C_{3} = {}^{n}C_{7}$, find n.

h) Find the value of $\dfrac{\lfloor 11}{\lfloor 8}$.

i) Expand $(2b+3a)^{3}$.

j) Find $\begin{vmatrix} 90 & 13 \\ -10 & 11 \end{vmatrix}$.   **1½×10**

UNIT-I

Q.2 a) If
$$A = \begin{bmatrix} 2 & 5 \\ 3 & 2 \\ 1 & 4 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 3 & 1 \\ 0 & 5 \\ -1 & 2 \end{bmatrix}$$
, then find the matrix (x) for which $A + B - X = 0$. **8**

b) Evaluate:
$$\begin{bmatrix} 3 & 2 & 1 \end{bmatrix} \begin{bmatrix} 2 & 0 & 1 \\ 1 & 0 & 2 \\ 2 & 1 & 0 \end{bmatrix} \begin{bmatrix} 6 \\ 4 \\ 2 \end{bmatrix}$$
.   **7**

Q.3 a) Solve the following equations using Cramer's Rule:
$$5x + 2y = 3$$
$$3x + 2y = 5$$
                                                                 8

b) In how many ways can four different books, one each in Chemistry, Physics, Biology and Mathematics be arranged in a shelf? **7**

UNIT-II

Q.4 a) Prove that every subset of a countable, set is countable. **8**
     b) Prove that the set of all rational numbers is countable. **7**

Q.5 a) Prove that least upper bound of a set if it exists is unique. **8**
     b) Give an example of a bounded set which contains its g.l.b. but it does not contain the l.u.b. **7**

UNIT-III

Q.6 a) Prove that every convergent sequence is bounded but not conversely. **8**

b) By definition, show that the sequence $\left\langle \dfrac{1}{2^n} \right\rangle$ converges to (0). **7**

Q.7 a) State and prove 'Monotone Convergence Theorem'. **8**

b) Show the series $\displaystyle\sum_{n=1}^{\infty} (-1)^n$ oscillates. **7**

UNIT-IV

Q.8 a) Evaluate $\displaystyle\lim_{x \to 0} \frac{x - \tan x}{x^3}$ by L'Hospital's Rule. **8**

b) Expand $\log (1+x)$ in powers of (x) by Maclaurin's theorem. **7**

Q.9 a) Show that $\displaystyle\lim_{x \to 0} \frac{e^x + \log\left(\dfrac{1-x}{e}\right)}{\tan x - x} = \frac{-1}{2}$. **8**

b) If $f(x) = x^3 + 2x^2 - 5x + 11$, find the value of $f\left[\dfrac{9}{10}\right]$ with the help of Taylor's Series. **7**

End Semester Examination, Dec. 2017

BCA – Third Semester

OBJECT ORIENTED DESIGN AND PROGRAMMING (BCA-302)

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) Which of the following is not a type of constructor?
        i) Copy constructor   ii) Friend constructor
        iii) Default constructor   iv) Parameterized constructor
    b) Which of the following statements is correct?
        i) Base class pointer cannot point to derived class.
        ii) Derived class pointer cannot point to base class.
        iii) Pointer to derived class cannot be created.
        iv) Pointer to base class cannot be created.
    c) One can use C++ as a procedural, as well as an object-oriented, language.
        i) True   ii) False
        iii) May be   iv) None of above
    d) Which of the following type of class allows only one object of it to be created?
        i) Virtual class   ii) Abstract class
        iii) Singleton class

e) Which of the following is not the member of class?
   i) Static function   ii) Friend function
   iii) Const function   iv) Virtual function
f) Which of the following term is used for a function defined inside a class?
   i) Member Variable   ii) Member function
   iii) Class function   iv) Classic function
g) Which of the following concept of oops allows compiler to insert arguments in a function call if it is not specified?
   i) Call-by-value   ii) Call-by-reference
   iii) Default arguments   iv) Call-by-pointer
h) How many instances of an abstract class can be created?
   i) 1   ii) 5
   iii) 13   iv) 0
i) Which of the following cannot be friend?
   i) Function   ii) Class
   iv) Object   iv) Operation function
j) Cout is a/an _____.
   i) Operator   ii) Function
   iii) Object   iv) Macro   **1½×10**

UNIT-I

Q.2 a) Explain all the features of OOPs in detail.   **10**
     b) What is procedural programming? Compare between procedural and object
        oriented programming.   .   **5**

Q.3 Write short notes on:
     a) Dynamic Binding   **5**
     b) Static Binding   **5**
     c) calloc( ) and malloc ( )   **5**

UNIT-II

Q.4 a) Write a program in C++ for sorting one dimensional array.   **10**
     b) What is inline function?   **5**

Q.5 a) Write different access specifiers such as public, private and protected with the help of a program.   **10**
     b) Write a program in C++ to reverse string.   **5**

UNIT-III

Q.6 a) What does the "this" pointer points to?   **5**
     b) What is virtual function and why it is so called. Give an example. **5**
     c) What are virtual destructors?   **5**

Q.7 Write a program for binary operator overloading.   **15**

UNIT-IV

Q.8 What are different forms of inheritance? Explain with an example.   **15**

Q.9 Write an example to explain the concept of exception handling. Explain the complete exception handling mechanism with an example.   **15**

End Semester Examination, Dec. 2017

BCA — Third Semester

OBJECT ORIENTED PROGRAMMING USING C++ (BCA-302CB)

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 ***State whether the statement are TRUE/FALSE. Support your answer with a suitable reason.***

   a) Declaration of variable can be done anywhere in the program in C++.
   b) For loop and while loop are pre-test loops.
   c) It is possible to overload constructors.
   d) Function overriding is possible only in inheritance.
   e) If both derived and base class are having constructors, base class constructor is executed first.
   f) The Try block immediately follows the Catch block.
   g) A function must have at least one argument.
   h) Main ( ) is a user defined function.
   i) An array is used to refer to multiple memory locations having the same name.
   j) A pointer is a variable.   **2×10**

PART-A

Q.2 Explain in detail all the major features of C++ language.   **20**

Q.3 a) Define a function. What is the need for functions?   **10**
      b) Differentiate between call-by-value and call-by-reference, using suitable examples.   **10**

Q.4 a) What are static data members? Why are they needed?   **10**
      b) Explain how friend functions are a threat to data hiding.   **10**

PART-B

Q.5 Why a constructor is called a special member function? Give suitable examples in support of your answer.   **20**

Q.6 Explain the concept of unary operator overloading, using suitable examples.   **20**

Q.7 Explain the following:
      a) Exception.
      b) Formatted I/O operations.
      c) Function overloading.
      d) Pure virtual function.   **5×4**

End Semester Examination, Dec. 2017
BCA – Third Semester
INTRODUCTION TO OPERATING SYSTEM (BCA-303 (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   Answer the following:
      a) An operating system manages _____.
      b) Real time systems are _____.
      c) A shell is _____.
      d) _____ is an interface between process and operating system.
      e) The number of processes completed per unit time is called _____.
      f) A major problem with priority scheduling is _____.
      g) A critical section is _____.
      h) The value of semaphore is initialized to _____.
      i) Four necessary conditions for deadlocks are _____.
      j) Paging is _____.   **2×10**

PART-A

Q.2   Define operating system. Elaborate the various functions performed by an operating system.   **20**

Q.3 a) Differentiate between process and program. Explain the various components of Process Control Block (PCB). **10**
     b) Describe, with example, all the necessary conditions for a deadlock to occur. **10**

Q.4 Let us consider four processes with following information:

Process	CPU Time	Priority
P_1	12	4
P_2	10	2
P_3	5	3
P_4	2	1

Assume arrival time for each process as zero. Calculate average wait time and turnaround time for FCFS, SJF, Priority and Round Robin (TQ = 4). **20**

___PART-B___

Q.5 a) Explain the steps that need to be taken when a page fault occurs in virtual memory system with the help of a neat diagram. **10**
     b) Explain different fitting techniques to fit the process of 100k, 250k, 150k, 300k and 120k into the memory chunks of 200k, 300k, 100k, 90k and 180k (in order). Calculate internal and external fragmentation in each case. **10**

Q.6 Define page replacement. Consider the following reference string: 5, 1, 2, 3, 4, 2, 1, 3, 4, 5, 3, 1. How many page fault would occur for the following page replacement algorithm, assuming three frames. All frames are initially empty:
     a) LRU
     b) FIFO
     c) OPTIMAL **20**

Q.7 Define Disk Scheduling. Explain any two Disk Scheduling algorithms, with suitable example and neat diagrams. **20**

End Semester Examination, Dec. 2017
BCA – Third Semester
DATABASE SYSTEM (BCA-303)

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:
a) Define data independence.
b) Write the syntax of 'SQL SECECT' statement.
c) What is surrogate key?
d) A database has data and relationships.   ***(True/False)***
e) Microsoft Access is an enterprise-class database product.   ***(True/False)***
f) In a relational model, relations are termed as:
   i) Tuples   ii) Attributes
   iii) Tables   iv) Rows
g) Count function in SQL returns the number of _____.
h) It is possible to define a schema completely using DDL and DML. ***(True/False)***
i) The statement in SQL which allows to change the definition of a table is _____.
j) The full form of DDL is _____.   **1½×10**

UNIT-I

Q.2 Write short notes on the following:
    a) Three level architecture of DBMS.
    b) E-R Diagrams.
    c) Applications of DBMS. **5×3**

Q.3 a) Explain in detail about database management system advantages over file management system. **10**
    b) Discuss, in detail, the concept of data independence. **5**

UNIT-II

Q.4 Explain the following:
    a) Key constraints.
    b) Integrity constraints. **7½×2**

Q.5 a) Differentiate between where clause and group by clause, with examples. **10**
    b) Explain the different data types in SQL. **5**

UNIT-III

Q.6 Explain, in detail, 3NF, 4NF and BCNF with suitable examples. **15**

Q.7 What is functional dependency? How it is different from fully functional dependency? Explain all types of functional dependencies with their properties. **15**

UNIT-IV

Q.8 Differentiate between the following:
    a) Distributed database and Relational database.
    b) Query processing and Optimization.
    c) Database security and its recovery. **5×3**

Q.9 Explain the timestamp based protocol for concurrency control in DBMS. **15**

End Semester Examination, Dec. 2017
BCA – Third Semester
WEB APPLICATIONS DEVELOPMENT (BCA-304 (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   Answer the following:
   a) HTML is what type of language:
      i) Scripting language.   ii) Markup language.
      iii) Programming language.   iv) Network protocol.
   b) Who is known as father of www:
      i) Robert Cailliau   ii) Tim Thompson
      iii) Charles Darwin   iv) Tim Berners-Lee
   c) What should be the first tag of HTML:
      i) <head>   ii) <title>
      iii) <html>   iv) <document>
   d) How can you make bulleted list with numbers:
      i) <dl>   ii) <OL>
      iii) <list>   iv)
   e) Which of the following is not a browser:
      i) Microsofts Bing   ii) Nescape Navigator

iii) Mozilla Firefox   iv) Opera

f) Which HTML tag produces the biggest heading:
  i) <h7>   ii) <h9>
  iii) <h4>   iv) <h1>

g) What does CSS stand for:
  i) Creative style sheets.   ii) Colourful style sheets.
  iii) Cascading style sheets.   iv) Computer style sheets.

h) HTML uses:
  i) User defined tags.   ii) Pre-specified tags.
  iii) Fixed tags defined by language. iv)   Tags only for linking.

i) Which of the following is correct JavaScript syntax to write "Hello World":
  i) system.out.println ("Hello World").
  ii) println ("Hello World")
  iii) document.write ("Hello World").
  iv) response.write ("Hello World").

j) Which tag is used to display picture in HTML page:
  i) picture   ii) image
  iii) img   iv) src   **2×10**

PART-A

Q.2   Write short notes on:
  a) www
  b) SMTP   **10×2**

Q.3   a) Differentiate between external and internal linking with proper examples. **5**
  b) What are different list tags available in HTML? Explain each.   **5**
  c) What is the structure of HTML? Explain the concept of frames in HTML with proper examples.   **10**

Q.4   a) What are different types of networks available? Differentiate, using valid examples.   **10**
  b) Design railway reservation table, using all attributes of table in HTML.**10**

PART-B

Q.5   Create Registration form in HTML, using check box, radio buttons, list box, selection box, email, submit and reset button. Describe the functionality and usage of the forms.   **20**

Q.6   What are cascading style sheets? Explain different types of CSS with suitable examples.   **20**

Q.7   a) What are different types of data types in JavaScript?   **10**
  b) Write a program to swap two images, using mouseover event.   **10**

End Semester Examination, Dec. 2017
BCA — Third Semester
SHELL PROGRAMMING (BCA-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) ***Write the commands for the following statements:***
    i)   Search all lines in a file which end with a semicolon.
    ii) Merge and sort the contents of files a, b and c and display the sorted output on the screen.
    iii) Command to display current date and time.
    iv) Display first 20 lines of a large file.
    v)   Move the file S2 and f2 to the dir MBA.   **2×5**

   b) ***Write the output of the following commands:***
    i)   Cloud $u+w, g-w \quad abc$
    ii) $ls \quad a*$
    iii) $ls \quad [b-dku-z]*$

iv) Who am i

v) Cut –C 12-15   file 1   **2×5**

PART-A

Q.2   a) What are the different states in which a process can be implemented? Explain with suitable examples.   **10**

c) Draw and explain the detailed architecture of UNIX operating system. **10**

Q.3   a) How overwriting and appending can be performed in LINUX? Using suitable example, explain how standard error can be redirected?   **10**

b) Explain the various shells available in UNIX operating system with their features.   **10**

Q.4   a) Explain the file attributes listed using $ls-l$ command in brief.   **10**

b) Explain the concept of absolute and relative path name with a suitable example.   **10**

PART-B

Q.5   a) Explain the mechanism of process creation and role of system call in detail.   **10**

b) Explain the shell features of 'while' and 'for' with syntax.   **10**

Q.6   a) Write a shell script which accepts a number from user and prints the reverse of a number.   **10**

b) Write a shell script which accept a number form user and print the factorial of the number.   **10**

Q.7   a) Explain the following environmental variables with examples:
   i)   PATH   ii) LOGNAME   iii) SHELL   iv) HOME
          10

b) Explain how numeric and string comparison is done by using test.   **10**

End Semester Examination, Dec. 2017
BCA – Fourth Semester
MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE
(BCA-401 (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   Answer the following:
a) Write the tabular form of set
   $A = \{x; XEN, x$ is a multiple of 3$\}$
b) State Distributive Law.
c) What is an Equivalence Relation?
d) Find GCD of (30, 90).
e) Give distance formula.

f) Write one-point form of equation of straight line.
g) Draw a directed graph.
h) DNF stands for _____.
i) Define a tree.
j) Give an example of one-one function. **2×10**

PART-A

Q.2 a) In a recent survey of 5000 people, it was found that 2800 read "Indian Express" and 2300 read "The Times of India", while 400 read both the papers. How many read neither "Indian Express" nor "The Times of India"? **10**

b) Let $P = \{2, 3, 4, 5\}$. Consider the relation R and S on P defined by
$R = \{(2, 2), (2, 3), (2, 4), (2, 5), (3, 4), (3, 5), (4, 5), (5, 3)\}$
$S = \{(2, 3), (2, 5), (3, 4), (3, 5), (4, 2), (4, 3), (4, 5), (5, 2), (5, 5)\}$
Find:
i) M_R
ii) M_S
iii) Check $M_{ROS} = M_R \times M_S$ **10**

Q.3 a) Prove that
$1 + 3 + 5 + \ldots\ldots\ldots\ldots + (2n - 1) = n^2$ by the Principle of Mathematical Induction. **10**

b) How many people must you have to guarantee that at least (9) of them will have birthdays in the same day of the week. **10**

Q.4 a) Explain the steps to draw a Hasse diagram of a Lattice. Also, draw Hasse diagram of "D_{70}". **10**

b) Determine the disjunctive normal form of the Boolean expression:
$\left(x \wedge \left(y \vee z \right) \right)$ **10**

PART-B

Q.5 a) What do you mean by Linear Homogeneous recurrence relations with constant coefficients? **10**

b) Solve the recurrence equation:
$2a_r - 5a_{r-1} + 2a_{r-2} = 0$
satisfying the conditions
$a_0 = 0$ and $a_1 = 1$ **10**

Q.6 a) Show that the line segment joining points $A(1, 2)$, $B(3, 6)$ and $C(-2, 4)$, $D(6, 4)$ bisect each other. **10**

b) Find the equation of straight line passing through $(3, -5)$ and parallel to the line joining the points $A(1, 2)$ and $B(-3, 4)$. **10**

Q.7 a) Define the following:
i) A closed path.
ii) Odd vertex.
iii) An edge.
iv) Incident edge.
v) Spanning tree. **2×5**

b) Determine the minimum spanning tree of the weighted graph shown below:
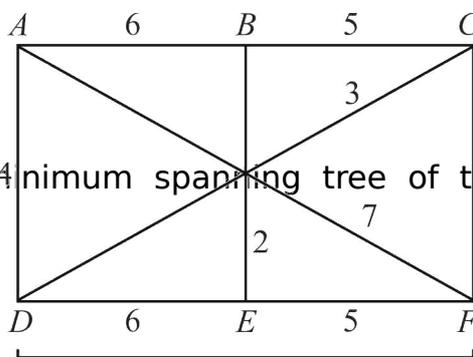
End Semester Examination, Dec. 2017
BCA – Fourth Semester
PROGRAMMING IN JAVA (BCA-403(CB))

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   Answer the following:
  a) Which keyword is used to make a class?
     i) Class   ii) Struct   iii) Int   iv) None of these
  b) Which statement is incorrect?
     i) Every class must contain main() method.
     ii) main () method must be made public.
     iii) None of the above.
  c) Which keyword can be used to prevent method overriding?

     i) Static   ii) Final   iii) Protected

d) Which of these class is superclass of string and string buffer?
     i) java.util   ii) java.lang   iii) None of these

e) Define 'Applet'.

f) Define 'Exception'.

g) Define 'Data types'.

h) Give any one type of inheritance.

State whether the following statements are TRUE or FALSE:

i) Java is object-oriented language.

j) Java package stores all standard java classes. **2×10**

PART-A

Q.2 a) What are constants? Discuss various types of constant in Java. Give example of each. **10**

     b) Describe the structure of java program with its features. Give example. **10**

Q.3 a) Compare in terms of their functions, the following pairs of statements:
       i) While and do-while
       ii) While and for.
5x2

     b) Write a program in Java to find the factorial of n number. **10**

Q.4 a) What are classes? How classes are declared in Java? Give example. **10**

     b) Define 'Array'. How arrays are handled in Java? Illustrate the answer. **10**

PART-B

Q.5 a) Write and explain any three string handling functions. **10**

     b) Discuss various exceptions and exception handling mechanism in Java with suitable example. **10**

Q.6 a) Compare Local and Remote Applet.
       5

     b) Discuss: i) Passing parameters to applet.
              ii) Getting input from user.
       10

     c) Discuss any two methods of life cycle.
       5

Q.7 Write short notes on:
     a) AWT controls.
     b) Elementary concepts of Event Handling.
       10×2

End Semester Examination, Dec. 2017
BCA – Fourth Semester
ELEMENTS OF COMPUTER GRAPHICS (BCA-404(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 ***State whether the following statements are TRUE or FALSE:***
   a) LCD stands for liquid crystal display.
   b) A mouse is an output device.
   c) The extraction of a portion from an image is known as clipping.
   d) Beam penetration is a method to generate n number of colors.
   e) There is a standard matrix for each type of transformation.
   f) There is no difference between zooming and panning.
   g) Orthographic projection is a type of parallel projection.
   h) NDCS stands for normalized device co-ordinate system.

i) A wireless mouse works on intra - red rays.
j) Graphics tablet works on the same principle as light pen.   **1½x10**
Write short notes on following:
k) Window to viewport mapping.
l) Frame by frame animation.   **2½x2**

PART-A

Q.2 a) Explain the working of CRT in detail.   **10**
    b) Explain graphic standard in detail.   **10**

Q.3 a) Write down the steps to draw a line using Bresenhem's line drawing algorithm.   **10**
    b) Write short notes on following:
       i) Gravity field.
       ii) Rubber band method.
       iii) Dragging.
       iv) Pointing device.   .
    2½×4

Q.4 a) Perform a 90° rotation on a given V where the triangle is $A\,(1,\,1)$, $B\,(7,\,3)$ and
      $C\,(9,\,6)$.   **10**
    b) What do you mean by composite transformation? Explain through some examples.   **10**

PART-B

Q.5 a) Explain 3 D transformation in detail.   **10**
    b) Explain different type of projections.   **10**

Q.6 a) Explain the following terms:
       i) Window.
       ii) Viewport.
       iii) WCS.
       iv) VCS.
    10
    b) Explain midpoint line clipping algorithm through an example.   **10**

Q.7 a) What do you mean by animation? Explain its procedure in detail.   **10**
    b) What is the importance of animation in television industry? Share your experience through real life examples.   **10**

End Semester Examination, Dec. 2017

BCA — Fourth Semester

SOFTWARE ENGINEERING (BCA-405(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   Answer the following:
      a) The objective of testing is:
           i)   Debugging.
           ii)   To uncover errors.
           iii) To gain modularity.
           iv) To analyze system.
      b) An important aspect of coding is:
           i)   Readability.
           ii)   Productivity.

iii) To use as small memory space as possible.
iv) Brevity.
c) In risk analysis of spiral model, which of the following risk is included:
i) Technical.
ii) Management.
iii) Technical and management.
iv) None of the above.
d) A quantitative measure of the degree to which a system, component or process possess a given attribute:
i) Measure.
ii) Measurement.
iii) Metric.
iv) None of the above.
e) Refinement is actually a process of elaboration. *TRUE/FALSE*
f) When elements of modules are grouped together that are executed sequentially in order to perform a task, is called:
i) Procedural cohesion.
ii) Logical cohesion.
iii) Temporal cohesion.
iv) Co-incidental cohesion.
g) The most creative and challenging phase of system life cycle is:
i) Feasibility study.
ii) Maintenance.
iii) Design.
iv) None of above.
h) Coupling is a measure of:
i) Relative functional strength.
ii) Interdependence among module.
iii) Both of the above.
iv) None of the above.
i) A zero level DFD describes:
i) That the system design can't be split further.
ii) Fully below up system design.
iii) Overview of process input and output.
iv) None of above.
j) Testing can only be initiated:
i) when the implementation is done.
ii) from the beginning of the project when planning is done.
iii) from the design stage only.
iv) None of the above.   **2×10**

PART-A

Q.2   a) Justify the statements:
i) Software as a product doesn't wear out, deform or crack.
ii) Software is not manufactured.   **2½×2**
b) What are the various categories of software? What are the challenges in software?   **6**
c) Discuss spiral model, in detail, with diagram.   **9**

Q.3   a) Explain in detail about requirement engineering process in requirement analysis.   **6**
b) Draw a DFD for a restaurant.   **7**
c) Draw an ER diagram for a course assuming that:
i) a course can be given multiple times during a term.
ii) each section has a single instructor.

iii) an instructor can teach multiple sections of the same course.
   course (name, title, dept., instructor, section, year, semester, enrolment)
   7

Q.4 Write short notes on:
   a) CoCoMo model.   b) Software project management.
   c) LOC.   d) Gantt chart.   **5×4**

PART-B

Q.5 a) "Transforming requirement specifications into application architecture is the most crucial activity during software development". Justify the given statement. Explain the various design concepts used in software design.
   10
   b) Give reason for your answer while stating the statement as true or false:
      i) The essence of any good function-oriented design technique is to map the functions performing similar activities into a module.
      ii) Traditional procedural design is carried out top-down, whereas object-oriented design is normally carried out bottom-up.
      iii) Common coupling is the worst type of coupling between two modules.
      iv) Temporal cohesion is the worst types of cohesion that a module can have.
      v) The extent to which two modules depend on each other determines the cohesion of two modules.   **2×5**

Q.6 a) Define the following terms:
      i) Fault.
      ii) Failure.
      iii) Bug.
      iv) Mistake.   **2½×4**
   b) Differentiate between:
      i) Alpha testing and beta testing.
      ii) Verification and validation.   **5×2**

Q.7 a) What is re-engineering? Differentiate between re-engineering and new development.   **10**
   b) Write short notes on:
      i) SCM.
      ii) Software maintenance.   **5×2**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
DATA COMMUNICATION AND NETWORKING (BCA-501 (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 Answer the following:
   a) Full duplex is _____.
   b) Disadvantage of Star Topology is _____
   c) Limitation of Twisted pair cable is _____.
   d) Netid and host id in IP address 129.145.26 is _____.
   e) MIME stands for _____.
   f) CRC stands for _____.

g) Repeater is used to _____.
h) The address size of IPv6 is _____.
i) A set of rules that govern all aspect of information communication is called _____.
j) The amount of data that can be carried from one point to another in a given time period is called _____. **2×10**

PART-A

Q.2 a) What is topology? Explain the advantages and disadvantages of each topology in detail. **10**
b) What are the necessary component of data communication system? **10**

Q.3 Why OSI model is called an open system interconnection? Explain each layer of OSI model in detail. **20**

Q.4 a) What are the design factors for transmission media? Explain unguided media in detail. **10**
b) How error correction and detection is done by hamming code? **10**

PART-B

Q.5 a) How handshaking is done by TCP? Explain the TCP packet format in detail. **10**
b) What is the need of classless addressing? Explain IPV6 in detail. **10**

Q.6 Write short notes on: **6**
a) Telnet.
b) POP.
c) SMTP.
d) DNS. **5×4**

Q.7 What is bluetooth? Explain the architecture of bluetooth with the help of a suitable diagram. **20**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
DATA COMMUNICATION AND NETWORKING (BCA-501 (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 Answer the following:
a) Communication between a computer and keyboard involves _____ transmission.
   i) Simplex   ii) Half duplex
   iii) Full duplex   iv) Automatic
b) A cable break in a _____ typology stops all transmission.

i) Mesh   ii) Bus

      iii) Star   iv) Primary

c) If a bandwidth of a signal is 5 KHz and the lowest frequency is 52 KHz, what is the highest frequency:

      i) 5 KHz   ii) 10 KHz

      iii) 47 KHz   iv) 57 KHz

d) The _____ layer is closest to transmission medium.

e) Mail service are available to network user through the _____ layer.

f) _____ is often used for navigation purpose:

      i) AMPS   ii) IS-95

      iii) Iridium   iv) GPS

g) Find the net id and host id of the given IP address : 129.14.16.8.

h) ICMP stands for _____.

i) Which is a legal port address:

      i) 0   ii) 513

      iii) 65,535   iv) All of the above

j) Which of the following is a connecting device?

      i) Hub   ii) Bridge

      iii) Repeater   iv) All of the above   **2×10**

PART-A

Q.2   a) What is data communication? Identify the main component of data communication system.   **10**

      b) In Analog transmission how analog to digital conversion takes place? Explain with the help of suitable diagram.   **7**

      c) Write short note on: Mesh topology.   **3**

Q.3   a) Given a bit pattern 1011100001, encode the bit using the following encoding scheme: RZ, NRZ (L), NRZ (I), polar and Manchester encoding.   **10**

      b) Explain the major classes of guided media. Also, discuss how guided media differs from unguided media?   **10**

Q.4   a) How do the layers of TCP/IP protocol suite correlate to the layer of OSI model? Discuss.   **10**

      b) Write short notes on:

        i) Cyclic redundancy check in error detection.

        ii) Parity check.   **5×2**

PART-B

Q.5   Write short notes on:

      a) Bluetooth.

      b) Virtual LAN.

      c) Frame Relay.

      d) ATM.   **5×4**

Q.6   a) What is the advantage of a hierarchical name space over a flat name space for a system?   **6**

      b) Write short notes on:

        i) E-mail

        ii) FTP   **5×2**

      c) Do you think SMTP is a suitable protocol for transforming live audio and video?   **4**

Q.7   Write short notes on:

a) UDP

b) IPV6 Address. **10×2**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
PROGRAMMING IN .NET (BCA-502 (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) How should you arrange catch blocks?

　i) Only one catch block for each try block.

　ii) Several catch blocks for a try block, arranged in order starting with exception and ending with the most specific exception.

    iii) Several catch blocks within one try block, arranged starting with the most specific exception and ending with exception.

    iv) The catch blocks should be used only when a finally block is not used.

b) Two methods with the same name but with different parameters.

    i) Overloading   ii) Loading

    iii) Multiplexing   iv) Duplexing

c) Common language runtime (CLR).

    i) Is an execution engine for all .net application.

    ii) Is similar to JVM as in Java.

    iii) Defines standard rules for defining .Net compliant languages.

    iv) Is a compiler?

d) It is mandatory to override virtual method.

    i) True   ii) False

e) What is Minimum and Maximum Size of Int32?

    i) – 3,200,102,400/3,200,102,448   ii) – 2,147,483,648/2,147,483,648

    iii) – 3,200,000,000/3,200,000,000   iv)   – 32,768/32,768

f) What does the keyword virtual mean in the method definition?

    i) The method is public   ii) The method can be derived

    iii) The method must be over-ridden   iv) The method can be over-ridden

g) We Can declare a property in an interface.

    i) True   ii) False

h) Are private class-level variables inherited?

    i) Yes   ii) No

i) Which of the following is NOT Value type variable?

    i) String   ii) System.Drawing.Point

    iii) Integer   iv) Decimal

j) What is the default modifier for the class member?

    i) Private   ii) Public

    iii) Internal   iv) Protected   **2×10**

PART-A

Q.2   Write short notes on the following:

    a) Garbage Collection.

    b) Constructor

    c) IL

    d) JIT

    e) Type Safety   **4×5**

Q.3   What is an array? How is it defined? How many different types of arrays are there in C#? Give suitable example to support your answer.   **20**

Q.4   What is a namespace? How is a namespace declared? How is a namespace used in other namespace? Give suitable examples.   **20**

PART-B

Q.5   Write short notes on the following:

    a) ListBox

    b) ComboBox

    c) Date TimePicker

    d) Menu   **5×4**

Q.6 What are the main classes involved in ADO.NET? Explain the role of each class in making a Database transaction. What is a Dataset? How is it important in making data driven application with C#? **20**

Q.7 Write short notes on the following:
a) Destructor
b) Super
c) Polymorphism
d) Interface **5×4**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
RDBMS USING ORACLE (BCA-503 (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 Answer the following in brief:
a) Define RDBMS.
b) What is Error handling?
c) What is transaction and concurrent transaction?
d) Explain any two character functions in ORACLE.

e) What are locks? Explain its advantage in concurrent management of transaction.
f) What is deadlock? Give a real life example of deadlocks.
g) What is the importance of recovery procedure?
h) What is a serializability schedule?
i) Define drop table command.
j) What are the causes of failures?   **2×10**

PART-A

Q.2   Define the following, in short:
a) Relation.
b) Entity integrity and referential integrity rule.
c) Intension and extension of a relation.
d) Primary key and candidate key.   **5×4**

Q.3   What is exception handling? Describe the various exception used in PL/SQL. Write a suitable a code for raising zero-divide exception in PL/SQL code block.**20**

Q.4   What is a transaction? Draw a diagram to explain the various states of a transaction. Also, describe the various properties of a transaction.   **20**

PART-B

Q.5   Define pessimistic and optimistic approach for concurrent execution of transactions. Define two-phase locking protocol with its advantages and disadvantages for concurrency control.   **20**

Q.6   What is meant by checkpoints? What is its importance? What are the steps performed during checkpoints?   **20**

Q.7   How external tables are used to move data in oracle database, with the help of a suitable example.   **20**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
COMPUTER GRAPHICS (BCA-503)

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) Graphics output devices are:
    i) Graphics tablet, mouse   ii) Keyboard

iii) Light pen, joystick   iv) None of these
b) Which method are used to get and set the position of a pixel, object or text in active area of a desktop?
   i) Drugging method   ii) Basic positioning method
   iii) Sketching method   iv) Gravity field method
c) The center of display screen is computed as:
   i) X max, y max   ii) Xmax/2,ymax/2
   iii) Xmax/3,ymax/3   iv) None of these
d) The rubber band is also applicable to_____ objects.
   i) Scale   ii) Scalar
   iii) Vector   iv) None of these
e) The division displayed on screen into row and columns is known as:
   i) Rubber band method   ii) Gravity field
   iii) Dragging   iv) Grid
f) The function of a plotter is like a:
   i) Monitor   ii) Projector
   iii) Printer   iv) None of these
g) A plotter is capable of:
   i) Printing a map   ii) Printing a similar images
   iii) Both i) and ii)   iv) None of these
h) _____ ink is used in laser printer.
   i) Wet   ii) Dry
   iii) Both i) and ii)   iv) None of these
i) The cabinet in laser printer in which the ink is filled is called:
   i) Cartage   ii) Toner
   iii) Both i) and ii)   iv) None of these
j) An inkjet printer places _____ of ink onto paper to print an image:
   i) Small droplets   ii) large droplets
   iii) Both i) and ii)   iv) None of these   **1½×10**

UNIT-I

Q.2   What is LCD? What is the basic method of working of LCD? List the main advantages of a LCD.   **15**

Q.3   Write short notes on:
a) PHIGS
b) CUL
c) GKS   **5×3**

UNIT-II

Q.4   A rectangle is scaled twice along x axis and four times along y axis. Find the transformed coordinates.   **15**

Q.5   Explain what are the steps required to plot a line using DDA algorithm.   **15**

UNIT-III

Q.6   a) What do you mean by projection? Explain its types, in detail.   **7**
     b) Differentiate between cavalier and cabinet projection. Why cabinet projection is more realistic than cavalier projection?   **8**

Q.7   Explain the following terms:
a) Vanishing points.

b) Principal vanishing point.
c) Foreshortening factor.
d) Depth cueing.
e) View plan.   **3×5**

UNIT-IV

Q.8   a) What do you mean by compression? Explain in detail.   **7**
      b) Why compression is required? Explain some situation in which you will compress
         the image.   **8**

Q.9   a) What do you understand by multimedia? Explain its various applications.**7**
      b) Explain different type of image formats, in detail.   **8**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
NUMERICAL ANALYSIS AND STATISTICS (BCA-504)

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   Answer the following:
      a) Define absolute error.
      b) After rounding off the number 2.3762 to the two decimal places, we get
         the number _____.

c) In a bisection method if rootslie between a & b then $f(a) \times f(b)$ is _____.

d) The root of the equation $x^3 - 2x - 5 = 0$ lies between _____.

e) In Newton Raphson method for finding the real root of equation $f(x) = 0$, the value of x is given by _____.

f) Given $y(0) = 3,\ y(1) = 12,\ y(2) = 81,\ y(3) = 200,\ y(4) = 100,\ y(5) = 8.$ find $\Delta^5 y(\theta)$

g) Prove that $(1+\Delta)(1+\nabla) = 1$

h) The technique for computing the value of the function inside the given argument is called _____.

i) State the Euler's general formula.

j) Given that $\dfrac{dy}{dx} = y - x$ with $y(0) = 2$; find k_1 and k_2. **1½×10**

UNIT-I

Q.2 a) Find a positive root of the equation $x^3 + 3x - 1$ by bisection method. **8**

b) Find the relative error if $\dfrac{2}{3}$ is approximated to 0.667. **7**

Q.3 a) Use Taylor's series method to solve $\dfrac{dy}{dx} = x + y;\ y(1) = 0$ numerically upto $x = 1.2$ with $h = 0.1$. Compare the final result with the value of explicit solution. **8**

b) Solve the equation $\dfrac{dy}{dx} = x + y$ with Initial condition $y(0) = 1$ by Runge- Kutta Rule, from $x = 0$ to $x = 0.4$ with $h = 0.1$. **7**

UNIT-II

Q.4 a) Given the following value, find $y(7.5)$:

x :	1	2	3	4	5	6	7	8
y :	1	8	27	64	125	216	343	512

8

b) Find the missing value in the table:

x :	45	50	55	60	65
y :	3	—	2	—	- 2.4

7

Q.5 a) Find the cubic polynomial which takes the following value:

x :	0	1	2	3
$f(x)$:	1	2	1	10

7

b) Use Lagrange's formula to find $f(6)$ from the following table:

x :	2	5	7	10	12
$f(x)$:	18	180	448	1210	2028

8

UNIT-III

Q.6 a) By method of least square, find the straight line that best fits the following data:

x :	1	2	3	4	5
y :	14	27	40	55	68

8

b) Use Trapezoidal Rule to evaluate $\int_0^1 x^3 dx$ considering five sub interval. **7**

Q.7 Evaluate $\int_0^6 \dfrac{dx}{1+x^2}$ by using

a) Simpson's $\dfrac{1}{3^{rd}}$ Rule

b) Simpson's $\dfrac{3}{8^{th}}$ Rule

c) Trapezoidal Rule **5×3**

UNIT-IV

Q.8 Define:
a) Level of significance.
b) Test of significance.
c) Errors in sampling. **5×3**

Q.9 A die is tossed three times. What is the probability of:
a) No fives come.
b) 1 five come.
c) 3 five come. **5×3**

End Semester Examination, Dec. 2017
BCA - Fifth Semester
FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE (BCA-505(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 **_Choose the correct option:_**
a) An area of the search space which is higher than the surrounding areas is a:
   i) Ridge.   ii) Plateau.   iii) Hill.   iv) None of these.
b) Uninformed search is also known as a:
   i) Heuristic search.   ii) Blind search.   iii) Goal search.   iv) Beam search.
c) Concepts, objects, nets, logic etc are the examples of:
   i) Tacit knowledge.   ii) Explicit knowledge.
   iii) Knowledge base.   iv) None of these.
d) Human nervous system consists of:
   i) 10^{10} neurons.   ii) 10^{11} neurons.   iii) 10^{12} neurons.   iv) 10^{14} neurons.
e) ES uses:
   i) Knowledge.   ii) Data.   iii) Information.   iv) None of these.
f) Which algorithm will work backward from the goal to solve a problem:
   i) Forward chaining.   ii) Backward chaining.
   iii) Hill climbing algorithm.   iv) None of these.
g) Which is used to construct the complex sentences:
   i) Symbols.   ii) Logical connectives.
   iii) Quantifiers.   iv) All of the above.
h) Frames is:
   i) A way of representing knowledge.   ii) Data structure.
   iii) Data type.   iv) None of the mentioned.
i) How many types are available in machine learning?
   i) 1   ii) 2   iii) 3   iv) 4
j) Neural networks are complex _____ with many parameters.
   i) Linear functions.   ii) Non linear functions.
   iii) Discrete functions.   iv) Exponential functions.
   2x10

PART-A

Q.2 a) Define the term Intelligence. Categorize the term and explain with the help of examples.
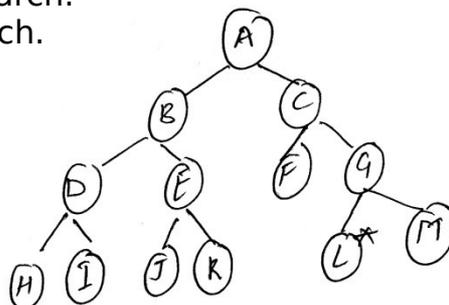   **10**
b) Explain the concept of artificial agents with the help of a diagram.
   10

Q.3 a) For the search tree given below, show:
   i) Breadth first search.
   ii) Depth first search.

Write the algorithm for both also.
   12
b) "Generate and test is one of the problem solving strategies used to solve well defined problems". Justify the statement and write the algorithm for the same.   **8**

Q.4   a) Design a frame for a banking system.
       10
   b) Write the predicate form of the following:
       i)   All indoor games are easy.
       ii) Rajiv only likes cricket game.
       iii) All pompeians died when volcano erupted in 79 A.D.
       iv) All that glitters is not gold.
       v) Gaurav loves all animals.
       1x5
   c) Show the following statements using Modus Ponens:
       i) A $\rightarrow$ B: If sam was born in Canada, then he is a Canadian.
       ii) P $\rightarrow$ Q: If the cake is made with sugar, then the cake is sweet.
       iii) A $\rightarrow$ B: If Jack is innocent, he is not guilty.
       iv) R $\rightarrow$ S: If an angle is inscribed in a semicircle, then it is a right angle.
       v) A $\rightarrow$ B: If you buy today, I'll give you a 10% discount.
          1x5

PART-B

Q.5   Write short notes on the following:
   a) Procedural vs. Declarative knowledge.
   b) Rule based deduction system.
   c) Backward and forward reasoning.
   d) Conflict Resolution.
      5x4

Q.6   a) Represent the following, using semantic not with nodes and labeled arcs:
       i)   Tom is a cat.
       ii) Tom caught a bird.
       iii) Tom is owned by John.
       iv) Tom is ginger in color.
       v) Cats like cream.
       vi) The cat sat on the mat.
       vii)   A cat is a mammal.
       viii)A bird is an animal.
       ix) All mammals are animals.
       x) Mammals have fur.
       1x10
   b) Write short notes on:
       i)   Probabilistic reasoning.
       ii) Fuzzy logic.
       5x2

Q.7   a) Describe ANN. Explain the role of perception in ANN.
          10
   b) Explain the concept of Machine Learning.
          10

End Semester Examination, Dec. 2017
BCA – Sixth Semester
JAVA PROGRAMMING (BCA-601A)

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) What is Inheritance?
   b) What is constant?
   c) What is class?
   d) What is point( )?
   e) What will be the result of an expression:
      (1+2) + (4/2)
   f) What is difference between string and string buffer?
   g) What is constructor?
   h) What is garbage collection?
   i) Give any one exception in Java.
   j) What is full form of JVM?   **1½×10**

UNIT-I

Q.2 a) Write a program in Java to find sum and reverse of three digit number. **9**
   b) Discuss the rules for defining variable in Java. Give example. **6**

Q.3 a) Discuss various data types available in Java. **9**
   b) What are differences between Java and C++? **6**

UNIT-II

Q.4 a) Discuss various types of operators in Java. Give example of each. **10**
   b) Compare break and continue statement. **5**

Q.5 Give the syntax, purpose and example:
   a) else-if ladder.
   b) switch.
   c) nested if.   **5×3**

UNIT-III

Q.6 a) What are Inner classes? Discuss various types of Inner classes. **10**
   b) Write short note on Recursion. **5**

Q.7 Explain in detail exception handling mechanism. Give suitable example. Also, discuss about finally clause. **15**

UNIT-IV

Q.8 What is interface? Explain, in detail, with suitable example. **15**

Q.9   Write short note on AWT.   **15**

End Semester Examination, Dec. 2017
BCA – Sixth Semester
SQL, PL/SQL AND D2K (BCA-601b)

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) Three data models are _____, _____ and _____.   **3**
       b) Three data types used in SQL are _____, _____ and _____.   **3**
       c) Two conditional statements available in RL/SQL are _____ and _____. **2**
       d) Reports in D2K are saved with _____ extension.   **1**
       e) Give two features of D2K.   **2**
       f) Index is used to _____.   **2**
       g) Structure of PL/SQL block is _____.   **2**

UNIT-I

Q.2   a) Explain the three level architecture of database in detail.   **10**
       b) What is Normalization? What is its need?   **5**

Q.3   Explain the network data model in detail.   **15**

UNIT-II

Q.4   a) Explain Inner and outer join in SQL with the help of examples.   **10**
       b) What is cluster? Explain its need with the help of an example.   **5**

Q.5   Explain five DML commands and two DDL commands with suitable examples
       and syntax.   **15**

UNIT-III

Q.6   Explain the Loop Statements available in PL/SQL with proper syntax and
       examples.   **15**

Q.7   What is the procedure or function in PL/SQL? What is its need? Explain the
       structure of procedure in PL/SQL.   **15**

UNIT-IV

Q.8   Explain all the steps of creating a report in D2K.   **15**

Q.9   Write short notes on:
       a) LOV objects.
       b) List item.
       c) Alerts.   **5×3**

End Semester Examination, Dec. 2017

BCA – Sixth Semester

DATA COMMUNICATION AND NETWORKING (BCA-602)

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 **State True and False:**
a) Infrared is a guided media.
b) Full form of SMTP is Simple Nail Transfer Protocol.
c) There are three layers in TCP/IP model.
d) The network layer is responsible for dialog establishment.
e) Repeaters are used to regenerate the signals.   **1×5**
Write short notes on the following:
f) LAN.
g) Twisted pair cable.
h) UDP.
i) Static routing.
j) CSMA.   **2×5**

UNIT-I

Q.2 Differentiate between the following:
a) Guided Media and unguided media.   **7½**
b) Synchronous and Asynchronous transmission.   **7½**

Q.3 What do you understand by transmission impairment? Explain in detail.   **15**

UNIT-II

Q.4 Explain OSI reference model through a diagram.   **15**

Q.5 What do you understand by error detection and correction code? Explain with an example.   **15**

UNIT-III

Q.6 What do you mean by a 'network'. Explain different types of networks in detail.   **15**

Q.7 Differentiate between the following:
a) Adaptive and Non-adaptive routing.
b) Static and Dynamic routing.
c) Bus and Mesh topologies.   **5×3**

UNIT-IV

Q.8 Write short notes on following:
a) CSMA/CD.
b) Packet switching.   **7½×2**

Q.9   Differentiate between the following:
    a) Private and public key encryption.
    b) Plain text and cipher text.   **7½×2**

End Semester Examination, Dec. 2017
BCA — First Semester
FUNDAMENTALS OF IT 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. *Each question carries equal marks.*

Q.1   a) Which of the following needs refreshing?
      i) SRAM.
      ii) DRAM.
      iii) ROM.
      iv) All of above.   **2**
    b) What passes into and out from computer via ports?
      i) Data.
      ii) Bytes.
      iii) Graphics.
      iv) Pictures.   **2**
    c) Which of the following is not purely output device?
      i) Screen.
      ii) Printer.
      iii) Speaker.
      iv) Plotter.   **2**
    d) The first macintosh computer was from:
      i) First generation.
      ii) Second generation.
      iii) Third generation.
      iv) Fourth generation.   **2**
    e) The control unit of a micro-processor:
      i) Stores data in memory.
      ii) Accepts input data from keyboard.
      iii) Performs arithmetic/logical function.
      iv) None of above.   **2**
    f) Write short notes on:
      i) ALU.
      ii) CU.   **2½×2**

UNIT-I

Q.2   Explain important characteristics of a computer. What basic operations are performed by a computer?   **15**

Q.3   Draw a block diagram of computer system and discuss functions of each in detail.   **15**

UNIT-II

Q.4   a) Compare and contrast between ROM, RAM, PROM, and EPROM.
    b) Explain advantages of compiler over interpreter in detail.   **7½×2**

Q.5   Define "Software". List and explain types of software. Give two examples of each category.   **15**

UNIT-III

Q.6   a) Differentiate between logical and syntax error.   **8**
      b) Draw a flow chart to add all even numbers from 0-100. Print result of calculation.   **7**

Q.7   Draw flow chart for factorial of number, Fibonacci series.   **15**

UNIT-IV

Q.8   a) Differentiate between bottom-up and top down approach.   **7**
      b) What is structured programming? Discuss.   **8**

Q.9   What is modular programming? Explain characteristics of modular programming.   **15**

End Semester Examination, Dec. 2017

BCA – First Semester
PROGRAMMING IN C (BCA-1002)

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) Which is not a loop structure?

 i) for   ii) do while

 iii) while   iv) repeat until

b) When following piece of code is executed, what happens? $b = 3; a = b ++;$

 i) a contains 3 and b contains 4 ii) a contains 4 and b contains 4

 iii) a contains 4 and b contains 3 iv) a contains 3 and b contains 3

c) Which of the following are unary operators in C?

 1. !   2. sizeof

 3. ~   4. &&

 i) 1, 2   ii) 1, 3

 iii) 2, 4   iv) 1, 2, 3

d) In which order do the following gets evaluated?

 1. Relational   2. Arithmetic

 3. Logical   4. Assignment

 i) 2134   ii) 1234

 iii) 4321   iv) 3214

e) In which header file Input/output function prototypes and macros are defined?

 i) conio.h   ii) stdlib.h

 iii) stdio.h   iv) dos.h

f) What is stderr?

 i) standard error   ii) standard error types

 iii) standard error streams   iv) standard error definitions

g) What is the purpose offlush() function?

 i) flushes all streams and specified streams.

 ii) flushes only specified stream.

 iii) flushes input/output buffer.

 iv) flushes file buffer.

h) The result of a Relational operation is always:

 i) either True or False   ii) is less than or is more than

 iii) is equal or less or more   iv) All of these

i) Which of the following is not a valid escape code?

 i) \t   ii) \v

 iii) \f   iv) \w

j) To increase the value of c by one, which of the following statement is wrong?

    i) c++;   ii) c = c + 1;

    iii) c + 1 => c;   iv) c + = 1   **1½×10**

UNIT-I

Q.2 a) Differentiate between:
      i) printf() and scanf()
      ii) getch() and getche()
      iii) putch() and putchar()
      iv) constant and variable
      v) identifiers and keywords   **2×5**
    b) Explain the importance of preprocessor in C language   **5**

Q.3 Explain the various operators available in C language, with their hierarchy and associativity.   **15**

UNIT-II

Q.4 Explain various control structures in C language with syntax and examples?   **15**

Q.5 Why there is a requirement of dynamic memory allocation? Explain the following dynamic memory allocation function
    Malloc()
    Calloc()
    Realloc()   **15**

UNIT-III

Q.6 a) What do you mean by recursion? Write a program to display a Fibonacci series upto a range entered by user by using recursion.   **10**
    b) What do you mean by dangling pointer? Explain with an example.   **5**

Q.7 a) What is the purpose of subroutine? What are the three important things that should be kept in mind while using a function?   **10**
    b) Differentiate between structure and union.   **5**

UNIT-IV

Q.8 a) Differentiate between:
      i) fprintf() and fwrite()
      ii) fscanf() and freadQ
      iii) text and binary files   **3×3**
    b) What do you mean by file organization? Explain various file organization techniques.   **6**

Q.9 What is scope and storage allocation of auto, static, local and register variables? Explain with an example.   **15**

End Semester Examination, Dec. 2017
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   Answer the following:

a)   If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & -1 \\ 1 & 2 \end{bmatrix}$

find $2A + B$

b)   Define 'Null Matrix'.

c)   If $\cos\theta = \dfrac{1}{2}$, find $\sin\theta + \tan\theta = ?$

d)   Differentiate $8x^2 - 7x + 10 \ \ w.r.t.x$.

e)   Find $|A|$ if $A = \begin{bmatrix} -7 & 6 \\ 2 & 3 \end{bmatrix}$

f)   What is binomial theorem.

g)   If n^{th} term is $\left[\dfrac{3n-5}{6}\right]$, write the first three terms of the sequence.

h) $(a)^{\frac{1}{2}} \times (a)^{\frac{5}{2}} \times (a)^{\frac{3}{2}} \ : \ $ _____.

i) $\tan^2\theta = $ _____ -1.

j) $\lim\limits_{x \to 1} \dfrac{3x+2}{2x} = $ _____.   **1½×10**

UNIT-I

Q.2   a) Compute 4A + 3B if

$A = \begin{bmatrix} -1 & -1 & 5 \\ 2 & 3 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 0 & 2 \\ 1 & -2 & 3 \end{bmatrix}$ **8**

b) Find A^{-1} where

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

7

Q.3   a) Verify Cayley-Hamilton theorem for the given matrix:

$$A = \begin{bmatrix} 2 & 3 & 1 \\ 2 & 2 & 6 \\ 1 & 1 & 2 \end{bmatrix}$$

10

b) Find the rank of the given matrix:

$$A = \begin{bmatrix} 5 & 2 & 1 \\ 4 & 7 & 2 \\ 1 & 3 & 5 \end{bmatrix}$$

5

UNIT-II

Q.4 a) Find the 6th term in $\left[\dfrac{x}{4} - y^2\right]^9$. **8**

b) How many different words can be made out of the letters in the word 'ALLAHABAD'?
In how many of these will the vowels occupy even places? **7**

Q.5 a) Simplify: $\dfrac{2^{m+3} \times 3^{2m-n} \times 5^{m+n+3} \times 6^{n+1}}{6^{m+1} \times 10^{n+3} \times 15^{m}}$ **8**

b) How many words can be formed from the letters of the word 'DAUGHTER' taking all letters together? **7**

UNIT-III

Q.6 a) Prove that: $\sqrt{\dfrac{1-\cos\theta}{1+\cos\theta}} = Co\sec\theta - \cot\theta$. **8**

b) Prove that: $\sin 20° + \sin 140° + \cos 170° = 0$. **7**

Q.7 a) Prove that: $\dfrac{\tan A}{1 - \cot A} + \dfrac{\cot A}{1 - \tan A} = Sec A Co\sec A + 1$. **8**

b) Prove that: $\dfrac{\sin 7A + \sin 3A}{\cos 7A + \cos 3A} = \tan 5A$. **7**

UNIT-IV

Q.8 a) Evaluate: $\lim_{x \to 3} \dfrac{x^3 - 4x - 15}{x^3 + x^2 - 6x - 18}$. **8**

b) If $f(x) = \begin{cases} \dfrac{x^2 - 1}{x - 1} & , \quad when \quad x \neq 1 \\ 2 & , \quad when \quad x = 1 \end{cases}$

show that $f(x)$ is continuous at $x = 1$. **7**

Q.9 a) Differentiate w.r.t (x) :
$(2x^3 - 3x^2 + 1)(3x^4 + 5x^3 + 2)$ **8**

b) Expand $(\cos(x))$ in powers of (x) by Maclaurin's series. **7**

End Semester Examination, Dec. 2017
BCA — Second Semester
DATA STRUCTURES (BCA-2001)

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.** Marks are indicated against each question.*

Q.1   ***Answer the following:***
   a) What are the techniques of graph traversing?
   b) What do you mean by threaded tree?
   c) What is the meaning of sorting?
   d) What is overflow and underflow condition in a linked list?
   e) Describe the structure of node in doubly linked list.
   Fill in the blank:
   f) Linked list overcomes the limitations of _____.
   g) Tree traversals methods are _____ _____ _____.
   h) _____ tree can be used as an index.
   i) _____ data structure can be used to perform recursion.
   j) Methods to find minimum spanning tree are _____.   **1½×10**

UNIT-I

Q.2   a) Explain the use and role of time and space complexity of an algorithm with example.   **7**
       b) Write an algorithm to insert an element at a particular location in an array.   **8**

Q.3   a) What do you mean by queue? What are the problems associated with linear queue? What are the various operations that can be performed on circular queue?   **10**
       b) What do you mean by deque? Explain with example   **5**

UNIT-II

Q.4   What is linked list? What are the advantages of linked list over array? Write algorithm to insert element at the beginning, middle, and end into doubly linked list.   **15**

Q.5   a) Construct a tree using:

In order:		E	A	C	K	F	H	D	B	G
Preorder:		F	A	E	K	C	D	H	G	B

7

b) Explain the threaded tree with all its types and example. **8**

UNIT-III

Q.6   Write an algorithm for binary search. Also, explain it with the help of an example.   **15**

Q.7   Sort the given list using quick sort. Also, write the algorithm for the same:
34 45 21 55 72 11 29 56 28   **15**

UNIT-IV

Q.8   a) What is collision? What are various collision resolution methods available?   **7**
       b) What are the various operations that we can perform on a file?   **8**

Q.9   a) What are the various file organization techniques? What are their advantages and disadvantages?   **10**
       b) What do you mean by hashing?   **5**

End Semester Examination, Dec. 2017
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.** Marks are indicated against each question.*

Q.1   a) Linked list overcomes the limitations of _____.
       b) Tree traversals methods are _____ _____ _____.
       c) _____ tree can be used as an index.
       d) _____ data structure can be used to perform recursion.
       e) Methods to find minimum spanning tree are _____.
       f) What are the techniques of graph traversing?
       g) What do you mean by threaded tree?
       h) What is the meaning of sorting?
       i) What is overflow and underflow condition in a linked list?
       j) Describe the structure of node in doubly linked list.   **1½×10**

UNIT-I

Q.2   a) Explain the use and role of time and space complexity of an algorithm with example.   **7**
       b) Write an algorithm to insert an element at a particular location in an array   **8**

Q.3   a) What do you mean by queue? What are the problems associated with linear queue. What are the various operations that can be performed on circular queue?   **10**
       b) What does u mean by deque? Explain with example   **5**

UNIT-II

Q.4   What is linked list? What are the advantages of linked list over array? Write algorithm to insert element at the beginning, middle, and end into doubly linked list.   **15**

Q.5   a) Construct a tree using:

Inorder:	E	A	C	K	F	H	D	B	G
Preorder:	F	A	E	K	C	D	H	G	B

7

       b) Explain the threaded tree with all its type and example.   **8**

UNIT-III

Q.6   Write the algorithm for binary search. Also explain it with the help of an example.   **15**

Q.7   Sort the given list using quick sort. Also write the algorithm for the same:
        34 45 21 55 72 11 29 56 28   **15**

UNIT-IV

Q.8   a) What is collision? What are various collision resolution methods available?   **7**
        b) What are the various operations that we can perform on a file?   **8**

Q.9   a) What are various file organization techniques? What are their advantages and disadvantages?
                10
        b) What do you mean by hashing?   **5**

End Semester Examination, Dec. 2017
BCA — Second Semester
DATABASE SYSTEMS (BCA-2002)

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.**
        Marks are indicated against each question.

Q.1   Answer the following:
        a) DBA stands for _____.
        b) Full form of BCNF _____.
        c) The language used to writing query is:
           i)   SQL.   ii)   DBTG.
           iii) System R.   iv)   None of the above.
        d) DML stands for _____.
        e) The _____ command is used to change or modify data values in a table.
        f) _____ function returns number of rows in a table.
        g) _____ function returns the maximum value of the selected list of items.
        h) _____ command withdraws all the privileges from the table.
        i) _____ normal form eliminates multivalued dependency.
        j) SQL statements are divided into following categories:
           i)   DDL and DML.   ii)   DCL.
           iii) TCL.   iv)   All of the above.   **1½×10**

UNIT-I

Q.2   What do you mean by data independence? Discuss its types and how independence is achieved?
        Explain. Also, discuss the capabilities of good DBMS.   **15**

Q.3   Explain the following:
        a) Data Dictionary.
        b) Types of Attributes.
        c) Cardinality Ratio.   **15**

UNIT-II

Q.4   Explain the following with example:
        a) Groupby clause.
        b) Union.
        c) Check constraint.
        d) Update.
        e) Minus.   **3×5**

Q.5   What do you mean by joins? Discuss all the joins with example.   **15**

UNIT-III

Q.6   What do you mean by normalization? Discuss the similarities and dissimilarities between 3NF and BCNF.   **15**

Q.7   What do you mean by two phase locking? Also discuss how inconsistency can be removed through two phase locking? Differentiate between shared and exclusive locks.
        15

UNIT-IV

Q.8   What do you mean by recovery? Explain immediate and deferred update techniques for recovery.
        15

Q.9   What is query processing? Explain all the phases of query processing with its diagram.   **15**

End Semester Examination, May 2017
BCA – Second Semester
LOGICAL ORGANIZATION OF COMPUTER (BCA-2003)

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**. Each questions carry equal marks.*

Q.1   Answer the following:
        a) What is Demultiplexer?
        b) What is 2's complement of 0011?
        c) Octal equivalent of binary number 1000 is _____.
        d) Draw the logic diagram of NOR gate.
        e) In Boolean algebra, A.A is equal to _____.
        f) What is the base of decimal number?
        g) Add: 11110 and 0011
        h) What is the full form of MIMD?
        i) Number of flip-flops required for 16-bit register are _____.
        j) What is Full Adder?   **1½×10**

UNIT-I

Q.2   Solve the following:
        a) $(65.75)_{10} = (?)_2 = (?)_8$ **5**
        b) Add 1101 and 0101   **3**
        c) Subtract 65 from 75 using 2's complement method.   **5**
        d) Find l's complement of -46.   **2**

Q.3   Write short notes on:
        a) Binary codes.
        b) ASCII and EBCDIC.   **7½x2**

UNIT-II

Q.4   Simplify the following using K-map:
        a) $f(x, y, z) = \sum(0, 1, 4, 5)$

        b) $f(a, b, c, d) = \sum(0, 1, 2, 3, 4, 5, 6, 7)$ **7½x2**

Q.5   a) What do you understand by Universal Gates? Explain.   **7**
        b) $f(a, b, c) = \overline{ab} + \overline{ac} + \overline{bc}$ **8**

UNIT-III

Q.6   Write short note on:
       a) Multiplexers.
       b) Half Adder.   **7½x2**

Q.7   What are flip flops? Discuss any two types of flip-flop with logic diagram and truth table. **15**

UNIT-IV

Q.8   Write short notes on:
       a) Associative memory.
       b) Virtual memory.   **7½x2**

Q.9   a) Write a short note on: 'microprocessor'.   **8**
       b) Explain processor and its types.   **7**

End Semester Examination, Dec. 2017
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. *Each question carries equal marks.*

Q.1   a) Which of following is not an OOP feature in C++?
          i)   Encapsulation.   ii) Abstraction.
          iii) Polymorphism.   iv) Exceptions.
       b) To be called object oriented, a programming language must allow:
          i)   Function that return value.
          ii)   Inheritance.
          iii) Library of predefined function.
          iv)   Public.
       c) Which type is best suited to represent logical value?
          i)   Integer.   ii) Boolean.
          iii) Character.   iv) All of these.
       d) Which of following is not a type of constructor?
          i)   Copy constructor.   ii) Friend constructor.
          iii) Default constructor.   iv) Parameterized constructor.
       e) What is an object?
          i)   A combination of message and data.
          ii)   A combination namespace.
          iii) Combination of task to be performed.
          iv)   A combination of array.
       f) What modifiers may be used with top level class?
          i)   Public.   ii) Abstract and final.
          iii) Both i) and ii)   iv) Only ii)
       g) The data in a class also called:
          i)   Attributes.   ii) Instance variable.
          iii) Fields.   iv) All of the above.
       h) The value 132.54 can be represented using which data type:
          i)   Float.   ii) Void.
          iii) Int.   iv) bool.
       i) Pick out the correct object about the instantination of output stream.
          i)   Cout.   ii) Cin.
          iii) Cerr   iv) Clog.
       j) Can abstract classes be inherited?
          i)   Yes   ii) No   **1×10**
       Write short notes on the following:

k) Class.

l) Strings in C++.   **2½x2**

UNIT-I

Q.2   Explain different types of specifiers available in C++.   **15**

Q.3   Explain basic principles of object oriented language.   **15**

UNIT-II

Q.4   Explain following:

a) Static data member.

b) Dynamic initialization of an object.

c) Type conversion.   **5x3**

Q.5   Write a program to overload (_____) operator.   **15**

UNIT-III

Q.6   What do you mean by inheritance? Explain with an example.   **15**

Q.7   Explain the following:

a) Multiple inheritances.

b) Multilevel inheritance.

c) Hierarchal inheritance.   **15**

UNIT-IV

Q.8   Write a program to showcase the use of try, catch, throw blocks.   **15**

Q.9   Write short notes on the following:

a) User defined classes.

b) Generic functions.

c) Aggregation.   **5×3**

End Semester Examination, Dec. 2017
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 Explain the following:
  a) After rounding off the number 2.8732 to the two decimal places, we get no. _____.

  b) In Newton Raphson method for finding the real root of equation $f(x) = 0$, the value of x is given by _____.

  c) Construct a backward difference table for the following values X, Y:

X	10	20	30	40	50
Y	45	65	80	92	100

  d) State the normal equations for fitting a straight line $y = ax + b$.

  e) The method of _____ is most systematic procedure to fit a unique straight line from the given data.

  f) State the Fuller's general formula for $y^1 = f(x,y)$ with $y(x_0) = y_0$

  g) State Rungs Kutta method of 4th order.

  h) Formula to calculate standardized normal random variable is _____.

  i) Probability of failure in binomial distribution is denoted by _____.

  j) State Lagrange's interpolation formula.
  1½x10

UNIT-I

Q.2 a) Find a real root of the equation $X^3 - 4X - 9 = 0$ correct up to two decimal places by bisection method.
         7

  b) Use Newton Raphson method to evaluate $\sqrt{12}$ correct up to two decimal places.   **8**

Q.3 a) Using Euler's method to solve $\dfrac{dy}{dx} = x + y,\ y(0) = 0$, find $y(1.0)$ **7**

  b) Evaluate $\int_0^4 e^x dx$ by using:

i) Trapezoidal Rule.

ii) Simpson's $\frac{1}{3}^{rd}$ Rule.   **8**

UNIT-II

Q.4   a) Fit a straight line if:

X:	1	2	3	4	5
Y:	3	4	6	9	12

                                                                                                                            8

b) Use Lagrange's method to find the value of f(x) when X = 7 from the given dots

X	:	5	6	9	11
f(x)	:	12	13	14	16

                                                                                                                            7

Q.5   Find the value of $f(6.5)$ and $f(2.5)$ by using the following data:

X	:	1	2	3	4	5	6	7	8
f(x)	:	1	8	27	64	125	216	343	512

                                                                                                                            15

UNIT-III

Q.6   Compute the node of the following distribution:

Class	:	0-7	7-14	14-21	21-28	28-35	35-42	42-49
Frequency:		19	25	36	72	51	43	28

                                                                                                                            15

Q.7   12 coins are tossed. What is the probability in a single tossing getting?

a) 9 or more heads.

b) Less than 3 heads.

c) Atleast 8 heads.   **15**

UNIT-IV

Q.8   Explain the following terms:

a) Random Sampling.

b) Stratified Sampling.

c) Purposive Sampling.   **5x3**

Q.9   Give the situation when you will apply:

a) Left tailed test.

b) Right tailed test.

c) Two tailed test.   **5x3**

End Semester Examination, Dec. 2017
BCA – Third Semester
SOFTWARE ENGINEERING (BCA-3004)

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 is software engineering?
     b) What are SDLC models available?
     c) What is the major advantage of using incremental model?
     d) What is error, mistake and fault?
     e) What is GANTT Charts?
     f) What is feasibility study?
     g) What is SRS and why it is used?
     h) What is modularization?
     i) What is cohesion?
     j) What is black box testing?   **1½×10**

UNIT-I

Q.2 Explain the different goals and principles of software engineering in detail.
     15

Q.3 What are waterfall model and spiral model? Explain them with examples.
     15

UNIT-II

Q.4 Explain project scheduling using PERT, GANTT Charts with suitable examples.
     15

Q.5 Explain data structure metrics, information flow metrics and information metrics with suitable examples.   **15**

UNIT-III

Q.6 Explain the following with suitable examples:
     a) Software design principles.
     b) Cohesion and coupling.
     c) User interface design.   **5×3**

Q.7 Explain software testing, testing process, testing life cycle with suitable examples. **15**

UNIT-IV

Q.8 Explain the following with examples:
   a) Coverage testing.
   b) Fault based testing. **7½×2**

Q.9 Explain software quality assurance and control with suitable examples. Also explain the ISO-9001 standards for software quality in detail. **15**

End Semester Examination, Dec. 2017
BCA — Fourth Semester
WEB APPLICATION DEVELOPMENT (BCA-4001)

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. *Each question carries equal marks.*

Q.1 Explain the following:
   a) Each computer connected to the internet must:
      i) be an IBM PC.
      ii) have a unique IP address.
      iii) be internet compatible.
      iv) have a modem connection.
   b) 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.
   c) HTML stands for:
      i) Hypertext making links.
      ii) Hypertext markup language.
      iii) Higher textual marking of links.
      iv) Hypertext mixer of links.
   d) The preferred topology for LAN is:
      i) Star.
      ii) Bus.
      iii) Ring.
      iv) Mesh.
   e) The extension of JavaScript file is:
      i)   .html
      ii) .css
      iii) .js
      iv) None of these.
   f) Which JavaScript function is used to convert the string into integer? Give its syntax.
   g) Explain definition list in HTML.

h) Explain web browser.
i) Define SMTP.
j) What do you mean by protocol? **1½×10**

UNIT-I

Q.2 a) Explain any three search engines, in detail with their pros and cons. **10**
b) Explain Email architecture in detail. **5**

Q.3 a) What do you mean by network? What are various types of computer network? **10**
b) Explain the term Internet addressing. **5**

UNIT-II

Q.4 Explain the following tags with their syntax and semantics:
a) Font.
b) Image.
c) UL.
d) OL.
e) Href. **3×5**

Q.5 a) What are various types of linking? Explain with the help of example. **10**
b) Explain the structure of HTML. **5**

UNIT-III

Q.6 Write the source code for the table given below:

```
|          |   Average |  Red  |
|          | ------------------| eyes  |
| Category | height | weight |       |
          |---------------------------------------|
          | Males | 1.9 | 0.003 | 40% |
          |---------------------------------------|
          | Females | 1.7 | 0.002 | 43% |
```
15

Q.7 Write the source code for the frame divided into 3 rows (20%, 50% remaining). Divide first row into 3 equal columns and third row into two equal columns. Every frame should have a source file. **15**

UNIT-IV

Q.8 a) Differentiate between internal and external style sheets. Explain with example. **7**
b) What do you mean by a dialog box? What are the different dialog boxes in JavaScript? Explain with example. **8**

Q.9 a) Differentiate between check box and radio button with example. **7**
b) What are the different data types in JavaScript? Explain. **8**

End Semester Examination, Dec. 2017
BCA – Fourth Semester
OPERATING SYSTEM (BCA-4002)

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) A binary semaphore has valves _____ or _____.
b) _____ condition must hold for non-sharable resources.
c) In _____ scheme a routine is not loaded into memory until it is called.
d) _____ is used to organize files.
e) _____ and _____ are the examples of block oriented devices.

Answer the following:
f) What is a critical section?
g) What is a semaphore?
h) What are the attributes of a file?
i) State producer consumer problem.
j) What do you understand by context switch?
   1½x10

UNIT-I

Q.2 Discuss the following:
a) Multi-programming.
b) Multi-tasking.
c) Multi-threading.   **5x3**

Q.3 How would you see operating system as an extended machine and resource manager? Discuss in detail.   **15**

UNIT-II

Q.4 What is a process? What is the difference between process and a program? Discuss process control block. Also, draw the process state diagram.
   15

Q.5 What do you understand by a deadlock? What are the necessary conditions for a deadlock? Discuss any one deadlock detection technique.
15

UNIT-III

Q.6 What is the difference between internal and external memory fragmentation? Also, explain why compaction is used in memory management? **15**

Q.7 Discuss concept of swapping in virtual memory. Give suitable examples.
15

UNIT-IV

Q.8 Explain various methods for free space management. Illustrate it with an example.
15

Q.9 Discuss the concept of disk-scheduling. Explain the disk scheduling criteria. Illustrate with example. Also discuss any one disk-scheduling algorithm.
15

End Semester Examination, Dec. 2017
BCA – Fourth Semester
MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (BCA-4003)

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.** Each question carries equal marks.*

Q.1 Answer the following:
a) What is recurrence relation?
b) $(A \cup B)^c = $ _____
c) Write the set $A = \{x : x^2 = 25\}$ in tabular form.
d) Define path.
e) What is weighted graph?
f) Determine the cardinality of $P \cap Q$.
g) State Associatives Law.
h) DNF in Boolean algebra stands for _____.
i) Define Euler circuit.
j) Define complementary graph.   **1½×10**

UNIT-I

Q.2 a) Prove by mathematical induction:
$1+2+3+4+\ldots\ldots+n = \dfrac{n(n+1)}{2}$.   **7**
b) In a survey of 200 musicians, it was found that 40 wore gloves on the left hand and 39 wore gloves on the right hand. If 160 wore no. gloves at all; then:
i) how many wore gloves on only right hand?

ii) how many wore gloves on both the hands?   **8**

Q.3   a) Show that $10! - 8! \neq (10 - 8)!$ **5**
      b) From 10 programmers, in how many ways can 5 be selected when.
         i)   a particular programmer is included every time.
         ii) a particular programmer is not included at all.   **5x2**

UNIT-II

Q.4   Solve the difference equation $a_r - 3a_{r-1} + 2a_{r-2} = 0$
      and find particular solution such that $a_0 = 1$ and $a_1 = 4$.   **15**

Q.5   Prove that the statement $\sim(p \vee q) \vee (\sim p \vee \sim q)$ is a contingency.   **15**

UNIT-III

Q.6   Verify:
      a) $(x + y + z)(\overline{xyz}) = x\bar{y} + y\bar{z} + z\bar{x}$ algebrically.   **10**

      b) Consider the lattice $L = \{1, 2, 3, 4, 5\}$ as shown in figure below:
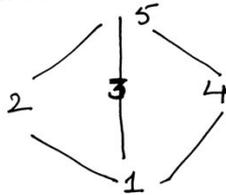
      Determine all the sublattices with three or more elements.   **5**

Q.7   a) Draw Hasse diagram of D_{1001}.   **10**
      b) State De-Morgan Laws. Verify one of the Demorgan's Law using truth
         table.   **5**

UNIT-IV

Q.8   a) Discuss Hamiltonian path and Hamiltonian graph along with an example.
         10
      b) Draw a regular graph of degree 2 and 3.   **5**

Q.9   a) Determine Preorder, Post-order and In-order traversal of the binary tree:

     15
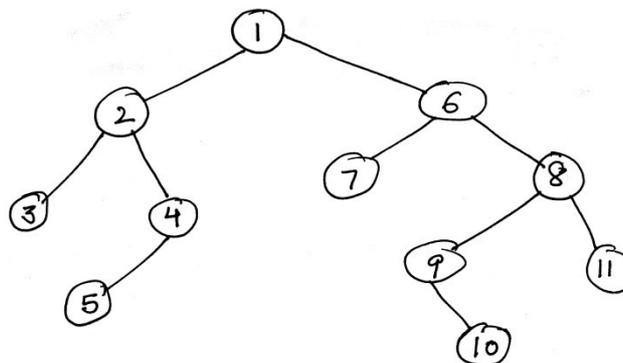
End Semester Examination, Dec. 2017
BCA – Fourth Semester
DATA COMMUNICATION AND NETWORKS (BCA-4004)

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.** *Each question carries equal marks.*

Q.1 Multiple choice questions:
    a) Which data communication method is used to transmit the data over a serial communication link:
      i) Simplex
      ii) Half duplex
      iii) Full duplex
      iv) None of these
    b) Error detection at the data link layer is achieved by:
      i) Bit stuffing
      ii) CRC
      iii) Hamming code.
      iv) None of these
    c) Loss in signal power, as light travels down the fiber is called:
      i) Attenuation
      ii) Propagation
      iii) Scattering
      iv) None of these
    d) The topology with highest reliability is:

i) Bus topology
ii) Star topology
iii) Ring topology
iv) None of these
e) In OSI model dialogue control and token management are responsibilities of:
i) Session layer
ii) Network layer
iii) Transport layer
iv)

Fill in the blanks:
f) The OSI model consists of _____ layers.
g) In data communications, ATM is an acronym for _____.
h) Encryption and Decryption are functions of the _____ layer.
i) _____ is a popular congestion control algorithm.
j) HTTP stands for _____.   **1½×10**

UNIT-I

Q.2 a) What do you understand by communication? Draw the basic block diagram of communication system.   **5**
b) Explain amplitude modulation and frequency modulation with suitable example.   **10**

Q.3 Explain the difference between service point address, logical address and physical address in the context of OSI reference model and also explain the responsibilities of session layer and physical layer.   **15**

UNIT-II

Q.4 Why a layered architecture was chosen to design network model? Explain TCP/IP model in detail.   **15**

Q.5 In stop and wait flow control method, the receiver receives ACK's for each data frame received. Explain the concept along with various cases.   **15**

UNIT-III

Q.6 What are the various routing protocols used in computer networks? Differentiate between link state routing and distance vector routing with suitable examples.   **15**

Q.7 Explain the following:
a) Frame format of Ethernet.
b) Frame format of token bus.
c) Sliding window ARQ.   **5x3**

UNIT-IV

Q.8 What do you understand by cryptography? Explain different types of cryptography by stating suitable examples.   **15**

Q.9 Write short notes on:
a) DNS.
b) FTP.
c) Firewalls.   **5x3**

End Semester Examination, Dec. 2017

BCA – Fifth Semester
COMPUTER GRAPHICS (BCA-5001)

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.** Marks are indicated against each question.*

Q.1   a) ***Fill in the blanks:***
   i)   CUI stands for _____.
   ii) Joystick is an _____ device.
   iii) WCS stands for _____.
   iv) Circle ( ) used _____ number of parameters.
   v)   There are _____ types of projections.   **1×5**
   b) ***Write short notes on the following:***
   i)   Output device.
   ii) Clipping.
   iii) Turbo C compiler.
   iv) Character generation.
   v)   Normalized device co-ordinate system.   **2×5**

UNIT-I

Q.2   Explain CRT in detail.   **15**

Q.3   Explain the following:
   a) Display processor.

b) Touch Panel.
c) Graphic standard.   **5×3**

UNIT-II

Q.4   What do you mean by transformation? Explain, in detail.   **15**

Q.5   Explain Cohen Sutherland algorithm for line clipping.   **15**

UNIT-III

Q.6   What do you mean by projection? Explain different type of projections.   **15**

Q.7   How 3-D is different from 2D? Explain through an example.   **15**

UNIT-IV

Q.8   Explain any 5 graphics functions with their syntax and purpose. **15**

Q.9   Write a program in C language to draw a chess board.   **15**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
JAVA PROGRAMMING (BCA-5002)

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) How many reserved keywords are currently defined in Java?
       b) Which keyword is used to define interfaces in Java?
       c) Which access specifier can be used for an interface?
       d) Decrement operator, --, decreases value of a variable by what number?
       e) Method overloading is process of defining two or more methods within same class that have same name but different parameter declaration **(True/False)**.
       f) Thrown keyword is not a part of Exception Handling **(True/False)**.
       g) Void is the return type of a method that does not return any value **(True/False)**.
       h) Define Class.
       i) _____ is a method having same name as that of its class:
          i) Constructor   ii) Class   iii) Delete.
       j) _____ operator is used to generate an instance of an exception that can be thrown by using throw:
          i) New   ii) Malloc   iii) None.   **1½x10**

UNIT-I

Q.2 a) Discuss Java Program Structure. **8**
    b) Write a program in C to find sum and reverse of n digit number. (n = 4) **7**

Q.3 Discuss the syntax and purpose of following. Draw flow chart of each.
    a) nested if statement.
    b) else if ladder. **15**

UNIT-II

Q.4 What do you understand by Arrays? Discuss how they are declared in Java? Give example of each. **15**

Q.5 Write short notes on the following:
    a) Inheritance.
    b) Constructor. **15**

UNIT-III

Q.6 a) Define Packages. Explain how packages are declared in Java? Give example. **8**
    b) Write short note on String Buffer and String. **7**

Q.7 a) List various types of Exceptions in Java. **8**
    b) Explain: Use of try, Catch. **7**

UNIT-IV

Q.8 Write short notes on AWT Controls and Inner Classes. **15**

Q.9 Write short note on Applets. **15**

End Semester Examination, Dec. 2017
BCA – Fifth Semester
SYSTEM PROGRAMMING (BCA-5003)

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.** Each question carries equal marks.*

Q.1 Explain the following:
    a) Define execution time.
    b) Define compilation time.
    c) Define Interpreter.
    d) Define linker.
    e) What is the need of optimization?
    f) What is the function of Push and Pop command.
    g) Define System software.
    h) Define Application software.
    i) What are overlays?
    j) Define Macros. **1½×10**

UNIT-I

Q.2 Explain the following terms:

a) Compiler.
b) Assembler.
c) Symbol table.   **5×3**

Q.3   Explain the Evolution of System Software with proper diagram.   **15**

UNIT-II

Q.4   What are the different phases of compiler? Explain with suitable examples.**15**

Q.5   Explain the design of two-pass macro preprocessor.   **15**

UNIT-III

Q.6   What are loaders? Name different loading schemes? Explain any one
scheme, in detail with suitable examples.   **15**

Q.7   Write short notes on:
a) Binders.
b) Relocability.   **7½×2**

UNIT-IV

Q.8   Explain the design of two-pass assembler with suitable examples.   **15**

Q.9   a) Differentiate between one-pass and two-pass assembler.   **5**
b) What are the three types of statements used in Assembler? Explain with
examples.   **10**

End Semester Examination, Dec. 2017
BCA / B.Sc. (IT) – Fifth Semester
E-GOVERNANCE (BCA-5008/IT.519)

Time: 3 hrs   Max Marks: **100**
Note: *Attempt **FIVE** questions in all; **PART-A is compulsory.** Attempt **ANY FOUR**
questions from **PART-B.** Each question carries equal marks.*

PART-A

Q.1   Multiple choice questions:
a) Which of the following statements is/are correct about e-Pragati?
i) 'e-Pragati' is a comprehensive framework for implementing e-
governance   and provides services to citizens of Karnataka.
ii) It is developed in association with Infosys.
   a) Only 1   b) Only 2   c) Both   d) None
b) The person who is protected under data protection law is known as:
i) Information Commissioner   ii) Data Subject
iii) Data Controller   iii) None   of   the
above
c) With which Andhra Pradesh is seeking collaboration for initiatives in e-
governance and cyber security?
i) Google   ii) Microsoft   iii) Intel   iv) Apple
d) When did IT Act 2000 come into effect?

i) 2000 October 17   ii) 2001 October 17
iii) 2000 November 11   iv) 2001 November 11

e) The National Food Security Mission (NFSM) aims to enhance the production of:
   i) Rice   ii) Wheat   iii) Fruits   iv) Vegetable   v) Pulses

f) Which of the following schemes has an impact on women empowerment?
   i) ICDS   ii) ASIDE   iii) Swadhar   iv) Ujjawala

g) When two companies are linked together by computers and they send business transactions through these computers, they are probably using.
   i) B2C   ii) Digital Wallets iii) Smart Cards   iv) Electronic   Data Interchange

h) PRI stands for:
   i) Prime Resource Inform Institution   ii) Panchayati Raj Institution
   iii) Post Record Information   iv) None of the above

i) Which project had a PAN India influence:
   i) Dirty reads   ii) Phantom reads
   iii) Lost updates   iv) Unrepeatable reads

j) G2C services are more connected to:
   i) Students   ii) Labour
   iii) Old Age People   iv) All of the above. **2x10**

PART-B

Q.2   What is e-governance? How it is helpful to implement the new policies of the government in an effective manner? Explain.
20

Q.3   What are the different security concerns in the context to implementation of e-Governance? Explain all, in detail, with the help of suitable example.
20

Q.4   Explain the difference between:
   a) G2C and G2G.
   b) B2B and B2C.
   c) e Commerce and m Commerce.   **20**

Q.5   There are number of barriers or limitations while implementing the e Governance in any country. List out any five major barriers in the context to the mentioned purpose.   **20**

Q.6   What kind of administrative culture is in India? Do you think that really India is facing lot of problems due to the so called "Babu Giri"? Explain with the help of any your real life experience in regard to the above mentioned purpose.   **20**

End Semester Examination, Dec. 2017
BCA - Sixth Semester
BASICS OF MIS AND ERP (BCA-6001)

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) Five benefits of ERP in plant maintenance.
      b) Why SAP is better than ERP? Give three reasons.
      c) What is MIS?   **5x3**

UNIT-I

Q.2   Explain the role of MIS in better decision making for any organization. Cite an
      example to prove this.   **15**

Q.3   a) What are the characteristics of MIS?
              8
      b) What are the about myths about MIS?   **7**

UNIT-II

Q.4   What is the classification of different models of decision making? Explain different
      types of models.   **15**

Q.5   Explain the components of Human Resource Information System   **15**

UNIT-III

Q.6   a) Why SAP is better than ERP?   **8**
      b) What are the benefits of ERP for any organization?   **7**

Q.7   Explain the different components of ERP in detail.
      15

UNIT-IV

Q.8   Explain the benefits of ERP in Marketing and Sales. Give an example in
      support of your statement.
              15

Q.9   a) How ERP helps in material management?   **8**
      b) What are the benefits of ERP for any manufacturing organization?   **7**

End Semester Examination, Dec. 2017
BCA - Sixth Semester
PROGRAMMING IN .NET (BCA-6002)

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   Answer the following:
      a) Which of the following converts the expression to Boolean data type in
         VB. NET?
         i) CBool   ii) CByte
         iii) Cchen   iv) CDate
      b) Statement is used to declare a variable:

i) Dim   ii) Redim
iii) Declare   iv) None of these

c) Which language is not a true object oriented programming language?
   i) VB.NET   ii) VB6
   iii) Java   iv) C++

d) Visual studio .NET provides which feature:
   i) Application development   ii) Debugging
   iii) Syntax checking   iv) All of the above

e) Which are the standard prefixes for the button and combo box controls respectively?
   i) btn and chb   ii) bto and chb
   iii) btn and cbo   iv) cmd and cbo

f) Which is not true about forms and controls in visual basic?
   i) They are pre-built.
   ii) They are graphical objects.
   iii) New form can't be added.
   iv) New versions of the classes must be created with each project.

g) In event-driven programming an event is generated by:
   i) the system   ii) a user's action
   iii) the program itself   iv) All of the above

h) Which is not an integer data type?
   i) Pryte   ii) Short
   iii) Integer   iv) Long

i) _____ is an example of database.

j) OLEDB is a way to get connected with the database. *(True/ False)*
    1½x10

UNIT-I

Q.2   What do you understand by IDE? How this development environment is helpful in developing the application softwares in an easy and user-friendly mode.   **15**

Q.3   a) What are the different data types available in VB .NET? Explain all in detail.   **8**
     b) Explain the difference between variable and constant with the help of suitable example.   **7**

UNIT-II

Q.4   a) Differentiate between procedure oriented programming and object oriented programming in detail.
     b) What are the different common controls in VB .NET? Explain at least five controls with their usage.   **15**

Q.5   What do you mean by function? What are the different types of functions available in VB .NET? Explain in detail.   **15**

UNIT-III

Q.6   Write short notes on:
     a) Combo box control.
     b) Group box control.
     c) Picture box control.   **5x3**

Q.7   What is database connectivity? What are the different ways to gel connected with database inn VB .NET?
       15

UNIT-IV

Q.8   What is ADO .NET? What are the different components of ADO .NET? Explain all components in detail with the help of suitable diagrams.
       15

Q.9   What are the different OOPS features? Explain all the features in detail with the help of suitable example.
       15

End Semester Examination, Dec. 2017
BCA - Sixth Semester
MULTIMEDIA CONCEPTS AND APPLICATIONS (BCA-6003) / MULTIMEDIA AND ANIMATION (BCA-603)

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 **(any ten):**
a) *A multimedia file:*
  i) *is same as any other regular file*
  ii) *must be accessed at specific rate*
  iii) *stored on remote server cannot be delivered to its client*
  iv) *none of the above.*
b) *A browser is used to view:*
  i) *Program code*   ii) *Story boards*
  iii) *Fonts*   iv) *web based pages and documents*
c) *Which of the following is displayable on a web page after installation of a browser plug-in?*
  i) *Windows 7*   ii) *Adobe Flash*
  iii) *Mozilla*   iv) *Internet explorer*
  v) *Firefox*
d) *In a real-time video conference, data from the server is _____ to the client sites:*
  i) *Unicast*   ii) M*ulticast*
  iii) *Broadcast*   iv) *None of the above*
e) *_____ is used to compress video.*
  i) *MPEG*   ii) *JPEG*
  iii) *Either i) or ii)* iv) *None of the above*
f) *Which of the following is a character encoding system?*
  i) *Font Tab*   ii) *HTML*
  iii) *CSS*   iv) *WYSIWYG*
  v) *Unicode*
g) *Vector-drawn objects are used for all of the following except:*
  i) *Lines*   ii) *Circles*
  iii) *Polygons*   iv) *Photographs*
  v) *Boxes*
h) *A 24-bit image is capable of representing how many different colors?*
  i) 2   ii) 16   256   iv) 65536   e) 16772216
i) *An interface should:*
  i) *be "transparent" to the user*
  ii) *provide control to the people who use it*
  iii) *allow the user to move about within the project*
  iv) *provide access to the "media" in the project*
  v) *all of the above*
j) *In general, the animation may appear jerky and slow if each frame is displayed for more than about:*
  i) *1/30 of a second*   ii) *1/15 of a second*
  iii) *1/4 of a second*   iv) *1/2 of a second*
k) *To create a smooth transition between two images when morphing, it's important to set numerous:*
  i) *Layers*   ii) *Keyframes*
  iii) *Key points*   iv) *Anchor tags*
  v) *Splines*   **1½x10**

UNIT-I

Q.2 a) *Describe briefly the history and future of multimedia. How might multimedia be used to improve the lives of its users?*
         8
   b) Describe several different environments in which multimedia might be used, and several different aspects of multimedia that provide a benefit over other forms of information presentation.   **7**

Q.3   a) Define the following:
        i) Interactive Multimedia.
        ii) Non-linear Multimedia.
        iii) HTML.
        iv) Multimedia in Medical industry.   **2x4**
      b) What are the various areas where Multimedia is extensively used? Explain its role in Army and in Medicine.   **7**

UNIT-II

Q.4   a) Describe the difference between a typeface and a font and list at least three attributes of a font   **8**
      b) Discuss the importance of text and ways text can be leveraged in multimedia presentations.   **7**

Q.5   a) Describe what characteristics a block of text might have.   **8**
      b) What characteristics a typeface might have?   **7**

UNIT-III

Q.6   Write short notes on **(any three):**
      a) Lossy and lossless compression.
      b) Entropy encoding.
      c) Source encoding techniques.
      d) Data decompression and its advantages.   **5x3**

Q.7   Differentiate among bitmap, vector and 3D images and describe the capabilities and limitations of all three   **15**

UNIT-IV

Q.8   a) Define 'animation'. Describe how it can be used in multimedia?   **8**
      b) Discuss the principles of animation. What do you mean by 2D, 2.5 D and 3 D animations?   **7**

Q.9   Discuss the physical and psychological principles as to why animation works, as well as how it is usually presented.   **15**

End Semester Examination, Dec. 2017
BCA – Sixth Semester
INSTALLING, CONFIGURING, MAINTAINING AND TROUBLESHOOTING A PC/NETWORKING AND PERIPHERALS AND WORKING WITH MS OFFICE (BCA-6004 / BCA-605)

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**. *Each question carries equal marks.*

Q.1   Answer the following:
a) Differentiate between TCP and UDP.
b) Name the different type of memory.
c) What is POST?
d) Name the layers of TCP/IP protocol suite.
e) Differentiate between cold and hot booting.
f) What is "power good" signal to motherboard?
g) What is BIOS?
h) Differentiate SATA and PATA.
i) What are different functions available in MS-Excel? Name any four.
j) Which operating system is secure WINDOWS10 or LINUX and why? **1½×10**

PART-A

Q.2   a) "BPO's are becoming popular". Explain its advantages and disadvantages for an organization.   **7**
b) What are the different BPO models? Explain in detail. Also, justify the following sentence. "Now a days, KPOS are emerging at a rapid pace".   **8**

Q.3   Explain the booting procedure of computer system. Differentiate between HOT and COLD booting. If your computer does not boot properly, what are the steps that should be followed during the troubleshooting? What is BIOS and POST?   **15**

Q.4   a) Write down the steps to troubleshoot the monitor, if it is not detected by the computer system.   **8**
b) Now a days, due to growth of Information Technology, there are some security threats related to data. How to assess and mitigate the information security threats?   **7**

PART-B

Q.5   a) Explain the TCP/IP protocol suite. Explain the functioning of all layers.   **7**
b) Explain different network topologies. Also, compare them with the help of table.   **8**

Q.6   a) Explain the Token Ring and Token Bus in detail with frame format, operations.   **8**
b) What is switch, bridge, router, repeater and gateway? Explain.   **7**

Q.7   Write short notes on:
a) Green computing.
b) FAT V/S NTFS.
c) RAM V/S ROM.   **5×3**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) — First Semester
INFORMATION TECHNOLOGY SYSTEM (7.101)

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**. Each question carries equal marks.*

Q.1   Answer the following:
      a) A light sensitive device that converts drawing, printed text or other images into digital form is called _____.
      b) Which protocol provides e-mail facility among different hosts:
         i)   FTP.
         ii) SMTP.
         iii) TELNET.
         iv) SNMP.
      c) _____ is the time during which a job is processed by the computer.
      d) MICR stands for _____.
      e) Who invented the super computer?
      f) Which of the following operating system is produced by IBM:
         i)   OS-2
         ii) Windows.
         iii) DOS.
         iv) UNIX.
      g) When was the first e-mail sent:
         i)   1963.
         ii) 1969.
         iii) 1971.
         iv) 1974.
      h) Combination of two or more networks are called _____.
      i) A communication pathway that transfers data from one point to another is called _____.
      j) _____ performs modulation and demodulation.   **1½×10**

PART-A

Q.2   Write short notes on:
      a) Types of ports.
      b) System unit and its explanation.
      c) Internet technologies.   **5×3**

Q.3   a) Compare the five generations of computers on the basis of software technology used.   **8**
      b) Write a detailed note on internet and its importance.   **7**

Q.4   What are the various input-output devices available? Explain, in detail.   **15**

PART-B

Q.5   a) Explain computer virus. What are the various types of threats that can be faced by computer system?   **10**

      b) How do header and footer can be inserted in a document? Explain its steps.   **5**

Q.7   Write short notes on the following in Excel:
      a) Data Sorting.
      b) Pivot Table.

c) Goal Seek. **5×3**

Q.7 a) How animations of various types can be applied in power point presentation? Discuss all methods, in detail. **10**

     b) Write the steps for creating a table in MS-Access. **5**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — First Semester
BUSINESS COMMUNICATION (7.102)

Time: 3 hrs.   Max Marks: **50**

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   Choose the correct option:
   a) Which of the following statements are true with respect to "Communication"?
      i)   It forms the foundation for planning.
      ii) Controlling is not possible without written and oral communication.
      iii) Both i) and ii).
      iv) None of the above.   **1**
   b) In formal letters to have a desired effect on the reader, it should be:
      i)   Free of any grammatical or spelling errors.
      ii) Polite, even if you are complaining.
      iii) Short and to the point.
      iv) All of the above.   **1**
   c) The goal of a negotiation process should always be:
      i)   We should be able to judge and use the vulnerability of the other party.
      ii) We should be able to sell the products at our specified price.
      iii) A win-win situation wherein both the parties are satisfied.
      iv) There may/may not be any future business relationship.   **1**
   d) Disruptive behavior in a team means:
      i)   Being overly aggressive.
      ii) Withdrawing and refusing to co-operate.
      iii) Raising irrelevant matters.
      iv) All of the above.   **1**
   e) The non-verbal communication displayed by attitude towards time, through punctuality and late arrival is called:
      i)   Haptics.
      ii) Chronemics.
      iii) Vocalics.
      iv) Proxemics.   **1**
   f) State whether the following statements are **TRUE** or **FALSE:**
      i)   Only 7% of what we communicate is through body language.
      ii) The entering of sound waves into our ears and striking the eardrums is called hearing.
      iii) The tone of our voice conveys our mood, interest, anger etc. to the audience.
      iv) An agenda has to be circulated in advance for meetings.
      v)   While listening to a song, we do the "Empathetic" type of listening.   **1×5**

PART-A

Q.2   What is communication? Explain the communication process in detail. Also discuss the various barriers to communication.   **10**

Q.3   "Making an effective presentation is an art which can be mastered with some preparation." Explain in detail.   **10**

Q.4.   a) What are listening skills? How is listening different from hearing?
       b) Explain the various types of listening with examples.   **5×2**

PART-B

Q.5 What is non-verbal communication? Illustrate with suitable examples. Explain the various components of non-verbal communication in detail. **10**

Q.6 a) Why does formal letter writing still hold its relevance in the age of telecommunication? Explain the steps in the formal letter writing process in detail.
b) Suppose you are V. Sharma. Write a cover letter to Mr. Gaurav Gupta, Manager HR of ABC Ltd., submitting your candidature for an opening in his organization, about which an advertisement was published in a newspaper. **10**

Q.7 Discuss the 'advantages and disadvantages of internet usage for the youth' in 200 words.
10

End Semester Examination, Dec. 2017

FUNDAMENTALS OF COMPUTER PROGRAMMING (7.103)

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**. *Each question carries equal marks.*

Q.1   a) What is logical error?
     b) What is a constant?
     c) Why do we use "main method" in a C# program?
     d) Write the syntax of do-while loop.
     e) What is concatenation of two strings?
     f) What is type conversion?
     g) What is a keyword? Give an example.
     h) What is arithmetic operator? Give an example.
     i) How to initialize a 1-D, 2-D array?
     j) Why to use try catch statements in C#?   **1½×10**

PART-A

Q.2   Write a pseudo code for finding largest number among 3 numbers. Also draw a flow chart for same.   **15**

Q.3   Describe toolbox window, server explorer window, property window, design window, source code window with examples.   **15**

Q.4   How many types of built-in functions exist in C#? Explain data types with an example of each type of data.   **15**

PART-B

Q.5   Write a program to find the factorial of a number.   **15**

Q.6   How do we create an array? Write a program to implement an array in C#.**15**

Q.7   Write short notes on the following:
     a) Error handling techniques.
     b) While and do while.   **7½×2**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester

DATABASE ENGINEERING-I (7.104)

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**. *Each question carries equal marks.*

Q.1   Answer the following:
    a) BCNF stands for _____.   **1**
    b) Define 'metadata'.   **2**
    c) In DDL, we modify the _____ of the table.   **1**
    d) Difference between data and information.   **2**
    e) The symbols used in ER diagrams are _____.   **5**
    f) Give two Codd's rules.   **4**

PART-A

Q.2   a) Explain the advantages and disadvantages of database system over file system.   **10**
    b) Explain the following terms:
       i) Data dictionary.
       ii) Two responsibilities of Database Administrator.
        5

Q.3   a) What do you mean by Data Independence?   **5**
    b) Explain the database architecture in detail.   **10**

Q.4   a) What is Normalization? What is the need of normalization?   **5**
    b) Explain the Second Normal Form (2NF) in detail with the help of an example.   **10**

PART-B

Q.5   a) Explain three DML (Data Manipulation Language) statements with proper syntax and examples.   **10**
    b) Explain the purpose of primary key with the help of an example.   **5**

Q.6   Write short notes on the following:
    a) View.
    b) Outer join.
    c) Referential Integrity Constraint.   **5×3**

Q.7   Give some applications of Business Intelligent Tools in the field of healthcare and education.   **15**

End Semester Examination, Dec. 2017

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 Fill in the blanks:

    a) Schema is defined as _____.   **2**

    b) 2NF states that _____.   **2**

    c) DDL stands for _____.   **1**

    d) Three clauses used in SQL are _____ , _____ and _____.   **3**

    e) Three types of joins available in SQL are _____, _____ and _____.   **2**

PART-A

Q.2 Explain the responsibilities of database administrator.   **10**

Q.3 Write short notes on the following:

    a) Data models.

    b) ER diagram.   **5×2**

Q.4 Explain the 3NF (Third Normal Form) in detail.   **10**

PART-B

Q.5 Explain two DDL (Data Definition Language) commands with proper syntax and examples.   **10**

Q.6 Write short notes on the following:

    a) Constraints in SQL.

    b) Keys in SQL.   **5×2**

Q.7 What are Business Intelligent Tools? Give some of their applications in various business sectors.   **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester

COMPUTER NETWORKS-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**. Each question carries equal marks.*

Q.1 ***Fill in the blanks:***
  a) The _____ layer changes bit into electro-magnetic signals.
  b) _____ is the unreliable protocol.
  c) _____ layer lies between the network layer and the session layer.
  d) A cable break in _____ topology stops all transmissions.
  e) _____ are the rules that govern a communication exchange.   **2×5**

PART-A

Q.2 Discuss the various components of data communication and explain the advantages of a multipoint connection over a point to point connection.   **10**

Q.3 Explain the difference between service point address, logical address and physical address in the context of OSI reference model. Also, explain the responsibilities of session layer and physical layer.   **10**

Q.4 What is ATM? Explain its layered architecture and frame format in detail.   **10**

PART-B

Q.5 What do you understand by cryptography? Explain different types of cryptography by stating suitable examples.   **10**

Q.6 Write short notes on:
  a) TCP three way hand shake.
  b) Domain Name System.
     10

Q.7 What do you understand by UDP? Explain the characteristics of UDP with its frame format.   **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – First Semester

BUSINESS ENVIRONMENT (7.106)

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   Answer the following:
   a) Factors that create opportunities and threats to business units is known as _____ environment.
   b) Study of human population is called as _____.
   c) Indian is an example of _____ economy.
   d) _____ is main motive of business enterprise.
      2½x4

PART-A

Q.2   What is business? Explain characteristics and objectives of business.
      10

Q.3   What is environment scanning? Explain need and importance of environment scanning.
      10

Q.4   What is internal environment? Explain various components of internal environment.   **10**

PART-B

Q.5   What is external environment? Write short notes on any two components of external environment.
      10

Q.6   Compare and contrast various features of capitalist, socialist and mixed economy with their implications.
      10

Q.7   Write short notes on:
   a) Government Rules.
   b) GST Analysis.
      10

End Semester Examination, Dec. 2017

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**. Each question carries equal marks.*

Q.1   a) Define central tendency in statistics.
b) What do you mean by independent events in probability?
c) What do you mean by Domain of a function?
d) If $A = \begin{bmatrix} 2 & 3 \\ 91 & -100 \end{bmatrix}$

  Find $|A|$
e) Define degree of a linear equation.

  2×5

PART-A

Q.2   If $U = \{1, 3, 5, 6, 8, 10, 13, 15, 20\}$

$A = \{1, 5, 8\}$, $B\{10, 15, 20\}$

$C = \{5, 8, 6, 20\}$

$D = \{13, 20, 8, 6\}$

Find the following:

a) $(C \cap D) \cup D$

b) $(A \cup B) - (B \cap A)$

c) $(A' \cup D') \cap (B' \cap C')$

d) $(B - A) \cup (C - D) \cap (A - C)$

e) $(A' \cap B') \cap (C' \cup D')$

  2×5

Q.3   a) Find the Domain and Range of the given function.

  $y = 3x + 5$

  5

b) If $f, g : R \to R$ are defined respectively by:

  $f(x) = 3x^2 + 2x + 2$

  $g(x) = 3x + 2$

  Find

  i) fof^2

  ii) fog

  5

Q.4 Find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$$

10

PART-B

Q.5 a) Find standard deviation for the following data:

Class Interval	Frequency
0 – 10	5
10 – 20	15
20 – 30	25
30 – 40	35
40 – 50	45

7

   b) Write formula of arithmetic mean for a grouped data. **3**

Q.6 A bag contains 7 red, 12 white and 4 green balls. What is the probability that
   a) 3 balls drawn are all white.
   b) 3 balls drawn are one of each colour. **5×2**

Q.7 a) Simplify:

$$\frac{3^5 \times 27^3 \times 9^4}{3 \times (81)^4}$$

5

   b) Solve:

$$x^2 - 7x + 10$$

5

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
SYSTEM ANALYSIS AND DESIGN (7.201)

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) UML.
  b) Prototype.
  c) SRS.
  d) BlackBox testing. **4×2**

PART-A

Q.2 Write short notes on the following:
  a) Technical feasibility.
  b) Testing. **8**

Q.3 What do you understand by requirement gathering? What are the different methods of requirement gathering? **8**

Q.4 What is SSAD? What are the advantages and disadvantages of SSAD? **8**

PART-B

Q.5 Write short notes on the following:
  a) Structured chart.
  b) Control design. **8**

Q.6 What is OOAD? How is it different from traditional system analysis and design? **8**

Q.7 Write short notes on:
  a) User interface.
  b) User experience. **4×2**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Second Semester
SYSTEM 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**. Each question carries equal marks.*

Q.1 ***Fill in the blanks:***
   a) Software mistakes during coding is known as _____.
   b) For a function of an variables, robust-testing yields _____ test cases.
   c) Mutation testing is one form of _____ testing.
   d) Test suite is a _____.
   Answer the following questions:
   e) What is Beta test?
   f) What is validation?
   g) How many levels are there in CMM model? Name them.
   h) Describe any four attributes of software quality.   **1×8**

PART-A

Q.2 What is testing? Explain software testing life cycle process, with the help of a suitable diagram.   **8**

Q.3 Consider a program to find the roots of quadratic equation with three input integers
   [a, b, c] that ranges from [0, 100]. Design a set of boundary value analysis test cases with one of the following messages:
   a) Not a quadratic equation.
   b) Roots are real and equal.
   c) Roots are real and unequal.
   d) Roots are imaginary.   **2×4**

Q.4 What is white Box Testing? Explain any one method of this testing with suitable testing example.   **8**

PART-B

Q.5 What is software quality attributes? Explain McCall model of software quality.
                                                                        8

Q.6 Explain process metrics and product metrics? Explain ISO standards for software development process.   **8**

Q.7 Explain the following terms:
   a) Quality Assurance.
   b) Test Execution.
   c) Test Environment.

d) Test Team Organization. **2×4**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
COMPUTER ALGORITHMS AND DISCRETE MATHEMATICS (7.203)

Time: 3 hrs. Max Marks: **60**

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) ***Fill in the blanks:***
   i)   Data structures are classified as _____ and data structure.
   ii) A _____ data structure is an ordered list with insertion and deletion done at one end of the list known as top of stack.
   iii) _____ and _____ are nonlinear data structure.
   iv) Left, root, right traversal known as _____ traversal. **1×4**

   b) ***Define the following:***
   i)   Tree date structure.
   ii) Stack.
   iii) Hamiltonian path.
   iv) Self loop in graph. **2×4**

PART-A

Q.2 a) Explain the classification of data structure.
   b) Write a short note on quick sort with algorithm. **6×2**

Q.3 a) Trace heap sort on the list:
   $L = \{11,\ 34,\ 67,\ 10,\ 5\}$. **8**

   b) Let $A = \{2,\ 3,\ 4\}\ and\ B = \{a,\ b,\ c\}\ and\ f = \{(2,\ a),\ (3,\ b),\ (4,\ c)\}$. Find domain, co-domain and range of the function. **4**

Q.4 a) Consider the function $f,\ g : R \rightarrow R$ defined by $f(x) = x^2 + 3x + 1,\ g(x) = 2x - 3$: Find the composition functions:
   i) fof.   ii) gof. **8**

   b) Let $A = \{7,\ 8,\ 9\}\ and\ B = \{k,\ l,\ m,\ n\}\ and\ R$ is the relation from A to B:
   $R = \{(7,\ k),\ (8,\ k),\ (8,\ l),\ (8,\ m),\ (9,\ m),\ (9,\ n)\}$, find $R^{-1},\ \overline{R},\ DOM(R),\ RAN(R)$. **4**

PART-B

Q.5 a) Create the binary tree using inorder and preorder traversal:

| Inorder: | F | B | G | A | D | C | E | J |
| Preorder: | A | B | F | G | C | D | E | J |

b)   What is spanning tree and when it is called a minimum spanning tree? Write Kruskal algorithm for minimum spanning tree.   **6×2**

Q.6   a) Define the following:
        i)   Forest.
        ii) Binary tree.
        iii) Degree of a vertex.   **3×2**
      b) A bag contains 8 blue and 4 red balls. Two balls are drawn at random with replacement. Find the probability of getting one blue and one red ball. **6**

Q.7   a) Solve the difference equation:
        $a_1 - 4a_{r-1} + 4a_{r-2} = 0$ and find the particular solution given that $a_0 = 1 \ and \ a_1 = 6$.
      b) Define cryptography with an example.   **6×2**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Third Semester

COMPUTER ALGORITHM AND DISCRETE MATHEMATICS (7.203)

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 question carries equal marks.*

Q.1　Answer the following:
　　　a) Give names of linear data structure.
　　　b) Define algorithm.
　　　c) Define stack.
　　　d) Define forest.
　　　e) Define tree.
　　　f) What is the difference between linear and binary search?
　　　g) What is the complexity of quick sort?
　　　h) If $A=\{2, 4, 6, 8, 10\}$; $B=\{1, 3, 5, 7, 9\}$ find $A \cup B$.　　　　**1×8**

PART-A

Q.2　a) Differentiate between linear and non-linear data structure.　　**4**
　　　b) What is an array? Which operation can be performed on array? Explain with example.　　**4**

Q.3　What is stack? Explain push and pop algorithm, with example.　　**8**

Q.4　Trace a heap sort on the list below:
　　　10, 50, 20, 30, 25, 90.　　　　　　　　　　　　　　　　　　**8**

PART-B

Q.5　Create binary tree, using in order and preorder traversal.

In order :	D	B	H	E	A	I	F	J	C	G
Pre order :		A	B	D	E	H	C	F	I	J	G

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　8

Q.6　Find minimum spanning tree, using Kruskal's algorithm of the following graph.

Q.7 **a)** Solve the difference equation $a_r - 4a_{r-1} + 4a_{r-2} = 0$ and find the particular

solution given that $a_0 = 1$ and $a_1 = 6$. **8**

b) For the tree shown below:
i) Which node is the root?
ii) Which nodes are leaves?
iii) Name the parent of each node.

8

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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   Answer the following:
   a) Which of the following is not a member of class?
   i)   Static function   ii) Member function
   iii) Friend function   iv) Virtual function
   b) Which symbol is used for destructor?
   i)   ~   ii) #
   iii) –   iv) +
   c) Which of the following approach is adopted by C++?
   i)   Top down   ii) Bottom up
   iii) Right left   iv) Left right
   d) A constrictor has the same _____ as that of class.
   i)   Valuable   ii) Object
   iii) Function   iv) Name
   e) Two methods with the same name and same parameter.
   i)   Abstraction   ii) Overloading
   iii) Multiplexing   iv) Duplexing   **2×5**

PART-A

Q.2   a) Is object oriented programming better than procedural oriented programming? Justify your answer.   **5**
   b) Create a class of employees to store their information:
   Data member:
                     Employee   ID,   employee   name   employee   salary, employee   experience.
   Member function   :   i)
                                                   To get the employee data.
                     ii) If the employee experience is greater than 5 years, a hike of Rs. 1000 will be given in salary.
                     iii) Display the employee data.   **5**

Q.3   How constructor is called in objected oriented programming? Write a program to show the use of parameterized constructor.   **10**

Q.4   a) What is static member function? Give an example.   **5**
   b) Write a program to show the concept of function overloading.   **5**

PART-B

Q.5   What is the relationship between base class and derived class? Write a program to show the concept of multiple inheritance.   **10**

Q.6   What is polymorphism? Write a program to show the concept of polymorphism.   **10**

Q.7   How exception handling is implemented in C++? Write a suitable program to demonstrate the concept of exception handling.   **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205) CBCS

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**. Each question carries equal marks.*

Q.1   Answer the following:
a) Which of the following is not a type of constructor?
   i) Copy constructor   ii) Friend constructor
   iii) Default constructor   iv) Parameterized constructor
b) How many instances of an abstract class can be created:
   i) 1   ii) 0
   iii) 5   iv) 13
c) Destructor is a member function whose name is same as the class name but is preceded by a:
   i) tilde   ii) hash
   iii) dot   iv) dollar
d) What is the default modifier for the class member:
   i) Private   ii) Public
   iii) Internal   iv) Protected
e) _____ is the process by which object of one class acquires the properties of objects of another class:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulator
f) The wrapping of data and functions into a single unit is known as:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulation   **2½×6**

PART-A

Q.2   a) What are the basic features of object oriented approach? Explain with the help of suitable example.   **10**
b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students.   **5**

Q.3   a) What is function overloading? Explain it with the help of suitable program.   **8**
b) Write a program in C++ to swap two number, using pass by value concept.   **7**

Q.4   What is the foundation of object model? What are the elements of object model? Explain with the help of example.   **15**

PART-B

Q.5 a) Write a program to show the concept of multilevel inheritance. **8**
     b) What is the need of inheritance? Explain the various types of inheritance. **7**

Q.6 a) What is operator overloading? Write a program to show the unary operator overloading. **8**
     b) What is polymorphism? Differentiate between compile time and run time polymorphism. **7**

Q.7 a) What is exception handling? Write a program to handle the divide by zero error with exception handling. **10**
     b) What is array out of bound exception? Explain. **5**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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 Answer the following:
  a) Which of the following is not a type of constructor?
   i) Copy constructor   ii) Friend constructor
   iii) Default constructor   iv) Parameterized constructor   **1**
  b) How many instances of an abstract class can be created:
   i) 1   ii) 0
   iii) 5   iv) 13   **1**
  c) Destructor is a member function whose name is same as the class name but is preceded by a:
   i) tilde   ii) hash
   iii) dot   iv) dollar   **2**
  d) What is the default modifier for the class member:
   i) Private   ii) Public
   iii) Internal   iv) Protected   **2**
  e) _____ is the process by which object of one class acquires the properties of objects of another class:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulator   **2**
  f) The wrapping of data and functions into a single unit is known as:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulation   **2**

PART-A

Q.2 a) What are the basic features of object oriented approach? Explain with the help of suitable example.   **5**
  b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students.   **5**

Q.3 a) What is function overloading? Explain it with the help of suitable program. **5**
  b) Write a program in C++ to swap two number, using pass by value concept.   **5**

Q.4 What is the foundation of object model? What are the elements of object model? Explain with the help of example.   **10**

PART-B

Q.5 a) Write a program to show the concept of multilevel inheritance.   **5**

b) What is the need of inheritance? Explain the various types of inheritance. **5**

Q.6 a) What is operator overloading? Write a program to show the unary operator overloading. **5**
b) What is polymorphism? Differentiate between compile time and run time polymorphism. **5**

Q.7 a) What is exception handling? Write a program to handle the divide by zero error with exception handling. **5**
b) What is array out of bound exception? Explain. **5**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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**. *Each question carries equal marks.*

Q.1   Answer the following:
   a) Which of the following is not a type of constructor?
      i) Copy constructor   ii) Friend constructor
      iii) Default constructor   iv) Parameterized constructor
   b) How many instances of an abstract class can be created:
      i) 1   ii) 0
      iii) 5   iv) 13
   c) Destructor is a member function whose name is same as the class name but is preceded by a:
      i) tilde   ii) hash
      iii) dot   iv) dollar
   d) What is the default modifier for the class member:
      i) Private   ii) Public
      iii) Internal   iv) Protected
   e) _____ is the process by which object of one class acquires the properties of objects of another class:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulator
   f) The wrapping of data and functions into a single unit is known as:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulation   **2½×6**

PART-A

Q.2   a) What are the basic features of object oriented approach? Explain with the help of suitable example.   **10**
      b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students.   **5**

Q.3   a) What is function overloading? Explain it with the help of suitable program.   **8**
      b) Write a program in C++ to swap two number, using pass by value concept.   **7**

Q.4   What is the foundation of object model? What are the elements of object model? Explain with the help of example.   **15**

PART-B

Q.5   a) Write a program to show the concept of multilevel inheritance.   **8**

b) What is the need of inheritance? Explain the various types of inheritance. **7**

Q.6 a) What is operator overloading? Write a program to show the unary operator overloading. **8**
b) What is polymorphism? Differentiate between compile time and run time polymorphism. **7**

Q.7 a) What is exception handling? Write a program to handle the divide by zero error with exception handling. **10**
b) What is array out of bound exception? Explain. **5**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Fourth Semester
DESKTOP APPLICATION DEVELOPMENT (7.206)

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**. Each question carries equal marks.*

Q.1   Explain the following:
a) DML.
b) SQL.
c) IDE.   **3×5**

PART-A

Q.2   Explain Data Designs Tools used in VB .net for connecting to database.   **15**

Q.3   Design a registration form for a student database in VB .net, taking following user controls in system:
a) User-'d
b) User-name.
c) User type.
d) Dept.
e) Course.
The data entered by user in form should be stored in database using ADO .net connectivity and explain how the data would be stored in SQL server?**15**

Q.4   Make a calculator in VB.net showing has VCA calculation:
a) Subtraction.
b) Multiplication.
c) Addition.
d) Division.   **15**

PART-B

Q.5   What is dataset in data configuration wizard? How to import database in windows form? Explain in detail.   **15**

Q.6   How many different types of perfects used in VB.NET? Explain at least three projects in detail.   **15**

Q.7   How to add classes in your VB .Net project? Add a class in user registration form in VB. Net.   **15**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Fourth Semester
DESKTOP APPLICATION 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**. Each question carries equal marks.*

Q.1 Explain the following:
  a) Data grid.
  b) Data set.
  c) Fill ( ).
  d) Encapsulation.
  e) List box control. **2×5**

PART-A

Q.2 What are the different advantages of VB .Net over traditional visual basic? Discuss the features in context to windows programing. **10**

Q.3 How .Net platform is more industry friendly in comparison to other programing approaches? Explain with the help of a suitable real life example. **10**

Q.4 What are the different database components in context to ADO .Net? Explain its all components in detail. **10**

PART-B

Q.5 Differentiate between the following:
  a) Label and textbox.
  b) Check box and radio button. **5×2**

Q.6 Explain all the features of object oriented programing in detail. How OOPS concept helps in building strong and secure programs? **10**

Q.7 Explain the following:
  a) Data access layer.
  b) DDL, DML in SQL. **5×2**

End Semester Examination, Dec. 2017
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**. *Each question carries equal marks.*

Q.1   Write short notes on the following:
       a) Malware v/s viruses.
       b) Role of proxy server in information security.
       c) Firewall.
       d) Honey pots and Honey nets.   **2×4**

PART-A

Q.2   How information security can be performed in an organization? Explain its functions of it in detail.   **8**

Q.3   Explain the security SDLC in detail with the help of diagrams and examples.**8**

Q.4   What are the international laws for information security?   **8**

PART-B

Q.5   How do you classify information security across an organization? What are ASSET risk?   **8**

Q.6   a) Explain the digital forensic methodology in detail.   **5**
       b) Differentiate between authorization and authentication with the help of an example.   **3**

Q.7   Write short notes on:
       a) Bull's Eye model for information security.
       b) Information security policy, its standards and practices.   **4×2**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Third Semester

DATABASE ENGINEERING-II (7.214)

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   Answer the following:
   a) Advantages of DBMS.
   b) Explain the various types of attributes.
   c) Create an E-R diagram of Library Management System.
   d) Discuss error handling and its advantages.   **2×4**

PART-A

Q.2   Explain the following with example:
   a) Primary key.
   b) Intersection clause.   **4×2**

Q.3   Differentiate between inner and outer joins in RDBMS. Why are these used? Discuss each join with suitable example.   **8**

Q.4   What are the integrity rules? Explain with example.   **8**

PART-B

Q.5   What is PL/SQL? Differentiate between SQL and PL/SQL. Also, discuss its architecture.   **8**

Q.6   What do you mean by database security? Why it is important for an organization? Also, discuss data tampering.   **8**

Q.7   How to code CLR stored procedure and function? Explain.   **8**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
DATABASE ENGINEERING-II (7.214)

Time: 3 hrs.   Max Marks: **60**

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 DML?
b) What is primary key?
c) What is database?
d) What do you mean by PL/SQL?
e) What is locking?
f) What is trigger?   **2×6**

PART-A

Q.2 Design an ER-diagram for an airline reservation system.   **12**

Q.3 What is union, intersection, minus, group by and having clause in SQL? Explain each with an example. How they are different from joins?   **12**

Q.4 What are different types of attributes in RDBMS? What is cardinality? Explain both with suitable examples.   **12**

PART-B

Q.5 Differentiate between the following:
a) Implicit and Explicit cursors.
b) Local and Stored procedures.   **6×2**

Q.6 What is a control structure in PL/SQL? Explain it with examples.   **12**

Q.7 What is deadlock prevention? Explain two phase locking with an suitable example.   **12**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
REQUIREMENT MODELING (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**. Each question carries equal marks.*

Q.1   Explain the following *(any two):*
    a) Functional Requirement.
    b) Requirement Reuse.
    c) Requirement Process.   **4×2**

PART-A

Q.2   What do you mean by information system? Discuss its purpose and characteristics.   **8**

Q.3   Differentiate between:
    a) Management information system and decision support system.
    b) Computer based system and manmade system.   **4×2**

Q.4   Discuss the various methods of system design with example.   **8**

PART-B

Q.5   Under what circumstances iterative models is used? Discuss its merits and demerits.   **8**

Q.6   What do you mean by business strategy? Discuss the various scenarios to understand the real problem.   **8**

Q.7   What do you mean by dataflow diagram? Explain context level DFD with example.   **8**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
REQUIREMENT MODELING (7.217)

Time: 3 hrs.   Max Marks: **60**

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 *(any two):*
a) Discuss iterative model with its merits and demerits.
b) Differentiate between use case diagram and sequence diagram.
c) Discuss the scope and objective of a business to control the business problem.   **6×2**

PART-A

Q.2   Do you think that analysis by a stakeholder is a must in the successful implementation of system? Justify this statement with example.   **12**

Q.3   What do you mean by requirement discovery? Explain all fact-finding techniques for requirement discovery.   **12**

Q.4   Explain the following with example:
a) Primary key.
b) Foreign key.
c) Composite key.
d) Super key.   **3×4**

PART-B

Q.5   "Communicating the right requirements leads to a successful system". Justify this statement with the help of example.   **12**

Q.6   Data analysis is becoming the need of industry now a days; explain the need of data analysis in education sector.   **12**

Q.7   Explain the following:
a) Requirement Reuse.
b) Requirement Completeness.   **6×2**

End Semester Examination, Dec. 2017

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**. Each question carries equal marks.*

Q.1   ***a) Fill in the blanks:***
   i)   A program in execution is called as _____.
   ii) Banker's algorithm is used for _____.
   iii) The time from submission to completion of a process is called _____.
   iv) Swapping needs _____ to store the swapped out programs.   **1×4**
   b) Answer the following:
   i)   Define operation system.
   ii) Differentiate hard-real-time and soft-real-time operating systems.
   iii) Name two types of fragmentations and their solutions.
   iv) Define directory structure in brief.   **1×4**

PART-A

Q.2   Consider the following set of process:

Process	Burst time	Priority
A	10	3
B	29	1
C	3	3
D	7	4
E	12	2

Calculate average turn-around time and average wait time for FCFS, SJF and priority algorithms. Also draw neat Gantt charts for the same.   **8**

Q.3   'The layered approach of O.S. operating system acts as a resource manager', what resources does it manage? Discuss.   **8**

Q.4   Define the characteristics of the operating systems given below:
   a) Batch operating system.
   b) Real time operating system.   **4×2**

PART-B

Q.5   Consider the following system snapshot using data structure in the Banker's algorithm:

	Allocatio	Max	Availabl

	n								e	
	A	B	C	D	A	B	C	D	AB	CD
P₀	0	0	1	2	0	0	1	2	15	20
P₁	1	0	0	0	1	7	5	0		
P₂	1	3	5	4	2	3	5	6		
P₃	0	6	3	2	0	6	5	2		
P₄	0	0	1	4	0	6	5	6		

Answer the following questions:

a) What are the contents of Need matrix?

b) Find out the safe sequence for the system. **4×2**

Q.6 Give memory management with the help of paging. How paging is implemented with the help of page table? Explain with an example. **8**

Q.7 What is directory? Explain the concept of disk scheduling with the help of an example. **8**

End Semester Examination, Dec. 2017

B. Sc. (Information Technology) – Fourth Semester
WEB APPLICATION DEVELOPMENT (7.303)

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:
a) HTML.
b) ASP .Net programming.   **5×2**

PART-A

Q.2   What are links in HTML? Differentiate external and internal links with suitable examples.   **10**

Q.3   Using suitable examples, write down any five manipulation commands in MySQL.   **10**

Q.4   Explain various validation controls in ASP .Net.   **10**

PART-B

Q.5   How website can be secured? Explain the process of authorization and authentication.   **10**

Q.6   Write a short notes on:
a) Grid view control.
b) Check box in ASP .Net.   **5×2**

Q.7   Explain how calendar is inserted in ASP .Net, using different attributes?   **10**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) – Fourth Semester
WEB APPLICATION DEVELOPMENT (7.303)

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**. Each question carries equal marks.*

Q.1   Write short notes on:
   a) Website security.
   b) Singular v/s paired tags.
   c) Ordered list.
   d) Grid view control.
   e) Hyperlinks in HTML.   **3×5**

PART-A

Q.2   What are the various server controls in ASP .net? How to use them?   **15**

Q.3   What do you mean by:
   a) Ajax Extension.
   b) Web Application.
   c) Site navigation.   **5×3**

Q.5   What is ASP .net? What are the components of .net framework?   **15**

PART-B

Q.5   a) Create a MRIU registration form in HTML.   **10**
        b) What is CSS? Explain internal CSS with example.   **5**

Q.6   a) Explain frame and frameset tag in HTML with the help of an example. **10**
        b) Explain list view control with an example.   **5**

Q.7   a) Differentiate ordered and unordered list.   **7**
        b) Explain three layer architecture of ASP .net.   **8**

End Semester Examination, Dec. 2017
B. Sc. (IT) - Fifth Semester
E-COMMERCE (BSCA-002)

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   Answer the following:
   a) What is the percentage of customers who visit a website and actually buy something called:
      i) Affiliate programs   ii) Click-through   iii) Spam   iv) Conversion rate
   b) Which is not a function of E-commerce:
      i) Marketing   ii) Advertising   iii) Warehousing   iv) None of these
   c) Which of the following describes e-commerce?
      i) Doing business electronically   ii) Doing business
      iii) Sale of goods   iv) All of the above
   d) Which of the following is part of the four main types for e-commerce:
      i) B2B   ii) B2C   iii) C2B   iv) All of these
   e) Which segment do eBay, Amazon.com belong?
      i) B2Bs   ii) B2Cs   iii) C2Bs   iv) C2Cs
   f) Which type of e-commerce focuses on consumers dealing with each other:
      i) B2B   ii) B2C   iii) C2B   iv) C2C
   g) Which products are people most likely to be comfortable buying on the Internet:
      i) Books   ii) PCs   iii) CDs   iv) All of these.
   h) Most individuals are familiar with which form of e-commerce:
      i) B2B   ii) B2C   iii) C2B   iv) C2C
   i) Which of the following is a useful security mechanism when considering business strategy and IT:
      i) Encryption   ii) Decryption   iii) Firewall   iv) All of these
   j) Which of the following is not related to security mechanism:
      i) Encryption   ii) Decryption   iii) E-cash   iv) All of the these

   2x10

PART-A

Q.2   a) "The flourishing of e-commerce business have changed the Indian shopping pattern." List five advantages of e-commerce for an individual. **10**

b) Explain the different types of e-commerce. **10**

Q.3   What are 4 C's of e-commerce? Explain in detail. **20**

Q.4   a) What is digital signature and what is its utility? **10**

b) Write a case study on the latest cyber-attack, giving the source of origin, purpose and impact caused by the attack. **10**

PART-B

Q.5   a) What is ERP and its scope? **10**

b) What is Supply Chain Management? What is its utility for an organization? **10**

Q.6   Discuss the case study of "Amazon" as a successful e-commerce portal. **20**

Q.7   a) Write five advantages and five disadvantages of ERP. **10**

b) What is electronic marketing? **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Fifth Semester
INTELLIGENT AGENTS (BSCA-501)

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   Answer the following:
a) Define Robotics.   **4**
b) What is commonly used programming language for AI _____?   **2**
c) What is a state space?   **4**
d) Which search method takes less memory?   **2**
e) A heuristic is way of _____.   **4**
f) Which predicate logic is applied on "All dogs have fails."   **4**

PART-A

Q.2   What kind of techniques will be used for solving AI problems?   **20**

Q.3   a) Differentiate between blind search techniques and heuristic search techniques.   **10**

b) Solve cryptarithmetic puzzle:

```
  SEND
 +MORE
 MONEY
```
                                                                              10

Q.4 a) Why it is appropriate to use predicate logic than propositional calculus?**10**
     b) Explain the unification algorithm. Trace operation of unification algorithm:
        i) f (Marcus) and f (Caesar).
        ii) f *(x) and (* f *(g(y))*.   **5×2**

PART-B

Q.5 a) Differentiate between forward and backward reasoning.   **10**
     b) Define and explain Conflict Resolution.   **10**

Q.6 Explain Bayesian probability network. Discuss Bayes theorem with an
     example.   **20**

Q.7 With the help of a diagram, explain expert system architecture. List and
     discuss applications of expert system.   **20**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Fifth Semester
INTERACTIVE COMPUTER GRAPHICS (BSCA-502)

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 Answer the following in brief:
     a) Define JPEG.
     b) Describe the definition of computer graphics.
     c) Explain PHIGS.
     d) Name three algorithms of scan conversion line drawing.
     e) Define point, pixel and circle.
     f) Discuss the use of computer graphics in education and training.
     g) What is translation? Define its homogenous co-ordinates.
     h) What is projection? Name the two types of projections.
     i) Define window to viewport mapping.
     j) Define various polygon fill algorithm.   **2×10**

PART-A

Q.2 a) What is computer graphics? What is the difference between computer
        graphics and image processing?   **10**

b) Write short notes on:
   i)   Computer aided design.   **4**
   ii) Computer Art.   **3**
   iii) Entertainment.   **3**

Q.3 a) Draw a line from (0, 0) to (6, 6) and another line from (0, 0) to (20, 10), using the DDA line drawing algorithm.   **10**
     b) Plot a line with end points (20, 10) and (30, 18), using Bresenham line drawing algorithm.   **10**

Q.4 Find out the pixel location of a circle having centre at (0, 0) and radius is 8, using Bresenhams circle drawing algorithm.   **20**

PART-B

Q.5 Write down the geometric representation in homogenous co-ordinates in all basic transformations. Translate a triangle with vertices A (2, 2), B (5, 2) and C (5, 5) by 3 units in x-axis and 2 units in y-axis.   **20**

Q.6 What is projection? Explain its different types. Compare parallel and perspective projections with reference to real world.   **20**

Q.7 Define terms viewplane and window. Describe Cohen-Sutherland algorithm for line clipping.   **20**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) -Fifth Semester
MULTIMEDIA SYSTEMS (BSCA-503)

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 **Unit-I** and **TWO** questions from **Unit-II**. All questions carry equal marks.*

Q.1 Choose the correct option:
   a) _____ audio/video refers to the use of the Internet for interactive audio/video applications:
      i) Interactive.   ii) Streaming live.
      iii) Streaming stored.   iv) None of the above.
   b) According to the Nyquist theorem, we need to sample an analog signal _____ times the highest frequency:
      i) three.   ii) two.
      iii) four.   iv) none of the above.
   c) _____ is an application protocol that establishes, manages, and terminates a multimedia session:
      i)   RIP   ii) SIP
      iii) DIP   iv) none of the above.
   d) A _____ shows the time a packet was produced relative to the first or previous packet.
      i)   timestamp   ii) playback buffer
      iii) sequence number   iv) none of the above
   e) The first phase of JPEG is:
      i)   DCT transformation   ii) quantization.
      iii) data compression   iv) none of the above
   f) _____ encoding is based on the science of psychoacoustics, which is the study of how people perceive sound:

i) Predictive.   ii) Perceptual.

iii) both i) and ii)   iv) none of the above

g) _____ is used to compress images:

   i) MPEG   ii) JPEG

   iii) either i) or ii)   iv) none of the above

h) MIDI stands for:

   i) Musical Instrument Digital Interface.   ii) Musical Instrument Digital Instruction.

   iii) MP3 Instrument Digital Interface.   iv) Musical Instrument Design Interface.

   v) Multimedia Instrument Digital Interface.

i) Space between lines is called:

   i) Leading.   ii) Kerning.

   iii) Extrude.   iv) Expanded

   v) Font Mapping.

j) Which of these is not likely to be the responsibility of a multimedia project?

   i) Create interfaces.

   ii) Ensure the visual consistency of the project.

   iii) Structure content.

   iv) Create budgets and timelines for the project.

   v) Select media types for content.   **2x10**

UNIT-I

Q.2 a) Define Multimedia. Mention the various applications and need of Multimedia in current IT scenario.

10

b) What is a Multimedia project and what are the roles of different team members. **10**

Q.3 a) Which basic Tools and software of multimedia are commonly used? **10**

b) How is plain text different from formatted text? **10**

Q.4 Write short notes on *(any two)* of the following:

a) Bitmap graphics vs. Vector graphics.

b) GIF vs. JPEG.

c) Graphics image sources.

d) Graphics on internet. **10x2**

UNIT-II

Q.5 a) Compression of data has made storage comfortable and economic. Elaborate. **10**

b) Differentiate between lossy and lossless compression with their application in real life situation.

10

Q.6 a) How is Hoffman coding different from Arithmetic coding? Explain with proper diagrams.

10

b) When and why do we use Differential Encoding in compression? **10**

Q.7 a) Mention the various principles of animation in multimedia. **10**

b) Name the different softwares used for 2 D animation and 3D animation. **10**

End Semester Examination, Dec. 2017
B. Sc. (ID) — Fifth Semester
ENTREPRENEURSHIP DEVELOPMENT (COM-O306)

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　Max Marks:　**100**

　　　　　　　　　　　　　　　　　　　　　　　　No. of pages:　　1

Note: *Attempt **FIVE** questions in all; **Q.1 is compulsory.** Attempt **ANY FOUR** questions from the remaining out of five questions. Each question carries equal marks.*

Q.1　Write short notes on the following:
　　　a)　Significance of forecasting.
　　　b)　Entrepreneurial Qualities.
　　　c)　Creating value proposition for customer.
　　　d)　Difference between Team and Group.
　　　e)　Sources of finance.　　　　　　　　　　　　　　　　　　　**4x5**

Q.2　Describe the different forms of business and state the importance of generating new business idea.　　　　　　　　　　　　　　　　　　　**20**

Q.3　How do you safeguard your business by undertaking following analysis?
　　　a)　Market Research
　　　b)　Industry and competitor analysis.　　　　　　　　　　　　　**20**

Q.4　Explain the process of management. Why control is vital function?　　　**20**

Q.5　What sort of risks any start up faces and what are the methods to assess it?　　**20**

Q.6   Describe the various sources of finance available for any business enterprise. Which will be most appropriate source of funding for new venture and why?   **20**

End Semester Examination, Dec. 2017
B.Sc. (IT) – First Semester
ENGLISH FOR ACADEMIC PURPOSES-IIA (EAP-IIA)

Time: 3 hrs.   Max Marks: **50**
                                                                                                No. of pages: 4
Note: *All questions are **compulsory**:*

Q.1   Read the passage and answer the following questions:

Is Science Dangerous?

The idea that scientific knowledge is dangerous is deeply embedded in our culture. Adam and Eve were forbidden to eat from the Tree of Knowledge, and in Milton's Paradise Lost the serpent addresses the tree as the 'Mother of Science'. Indeed the whole of western literature has not been kind to scientists and is filled with images of them meddling with nature with disastrous results. Just consider Shelley's Frankenstein, Goethe's Faust and Huxley's Brave New World. One will search with very little success for a novel in which scientists come out well - the persistent image is that of scientists as a soulless group unconcerned with ethical issues. And where is there a film sympathetic to science?

Part of the problem is the conflation of science and technology. The distinction between science and technology, between knowledge and understanding on the one hand and the application of that knowledge to making something, or using it in some practical way, is fundamental.

Science produces ideas about how the world works, whereas the ideas in technology result in usable objects. Technology is much older than anything one could regard as science and unaided by any science. Technology gave rise to the crafts of early humans, like agriculture and metalworking. It is technology that carries with it ethical issues, from motorcar production to cloning a human.

By contrast, reliable scientific knowledge is value-free and has no moral or ethical value. Science merely tells us how the world is. That we are not at the centre of the universe is neither good nor bad, nor is the possibility that genes can influence our intelligence or our behaviour.

The social obligations that scientists have as distinct from those responsibilities they share with all citizens comes from them having access to specialised knowledge of how the world works, not easily accessible to others. Their obligation is to both make public any social implications of their work and its possible applications and to give some assessment of its reliability.

It is not easy to find examples of scientists as a group behaving immorally or in a dangerous manner, the classic paradigm being the eugenics movement. The scientific assumptions behind this proposal are crucial; the assumption is that most desirable and undesirable human attributes are inherited. Not only was talent perceived of as being inherited, but so too were insanity and any kind of so-called feeblemindedness. They completely failed to give an assessment of the reliability of their ideas. Quite the contrary, and even more blameworthy, their conclusions seem to have been driven by what they saw as the desirable social implications. By contrast, in relation to the building of the atomic bomb, scientists behaved morally and fulfilled their social obligations by informing their governments about the implications of atomic theory. It was an enormous engineering feat to build the bomb but the decision to do this was taken by politicians, not scientists.
The moralists have been out in force telling us of the horrors of cloning. Many others, national leaders included, have joined in a chorus of horror. But what horrors? What ethical issues? In all the righteous indignation not a single relevant new ethical issue has been spelled out.

Those who propose to clone a human are medical technologists not scientists. It is not, as the bio-moralists claim, that scientific innovation has outstripped our social and moral codes. Just the opposite is the case. Their obsession with the life of the embryo has deflected our attention away from the real issue, which is how children are raised and nurtured. The ills in our society have nothing to do with assisting or preventing reproduction but are profoundly affected by how children are treated.

So what danger does genetics pose? Gene therapy, introducing genes to cure a genetic disease like cystic fibrosis, carries risks, as do all new medical treatments. There may well be problems with the testing of new treatments, but are these difficulties any different from those related to trying out new drugs for AIDS? Anxieties about creating designer babies are at present premature as it is too risky, and we may have, in the first instance, to accept what has been called procreative autonomy, a couple's right to control their own role in reproduction unless the state has a compelling reason for denying them that control. Should the ethical issues relating to the applications of genetics, for example, lead to stopping research in this field? The individual scientist cannot decide, for science, like genetics, is a collective activity with no single individual controlling the process of

discovery. It is ethically unacceptable and impractical to censor any aspect of trying to understand the nature of our world.

Do the following statements agree with the information given in the passage?

*In boxes **1-5** on your answer sheet, write*

    TRUE   *if the statement is true according to the passage*

    FALSE   *if the statement is false according to the passage*

    NOT GIVEN   *if the information is not given in the passage*

1) The film industry does not make films about science.

2) Scientists do not work in unison when deciding what needs to be researched.

3) Parents want to have cloned children now.

4) Technology was important before the development of science.

5) Many people consider cloning to be undesirable.   **10**

Q.2   Read the passage and answer the following questions:

Advice for Employees

Most people suffer no ill-effects from using VDUs (Visual Display Units) as they don't give out harmful levels of radiation and rarely cause any kind of skin complaint. If you do suffer ill-effects, it may be because of the way you're using the computer and this can be avoided by well-designed workstations. When working at a VDU, make sure you keep a good posture and that your eyes are level with the screen.

Under health and safety regulations your employer should look at VDU workstations, and reduce any risks by supplying any equipment considered necessary (e.g. a wrist rest). They should also provide health and safety training. This also applies if you're working at home as an employee and using a VDU for a long period of time. There is no legal limit to how long you should work at a VDU, but under health and safety regulations you have the right to breaks from work using a VDU. This doesn't have to be a rest break, just a different type of work. Guidance from the Health and Safety Executive (HSE) suggests it's better to take frequent short breaks but if your job means spending long periods at a VDU, for example as in the case of data input, then longer breaks from your workstation should be introduced.

If you're disabled, your employer's duty to make reasonable adjustments for you may mean that they will provide you with special computer equipment.

You can also get advice and maybe help with paying for equipment from the local job centre. Studies haven't shown a link between VDU use and damage to eyesight, but if you feel that using a VDU screen is making your eyes tired, tell your employee safety representative. You have the right to a free eyesight test if you use a VDU a lot during work hours. If you're prescribed glasses your company must pay for them, provided they're required in your job.

If you have any health problems you think may be caused by your VDU, contact your line manager. He/she has a duty to consult you on health and safety issues that affect you, and should welcome early reporting of any issue.

Complete the sentences below.

Choose **NOT MORE THAN THREE WORDS** from the passage for each answer.
Write your answers in boxes **1-5** on your answer sheet.

1) It is unusual to get a _____ as a result of using computers.

2) Employers may be required to provide you with items such as a _____ to use while at work.

3) If your job involves tasks such as _____, the advice from the HSE may not apply.

4) Financial assistance in the case of special requirements may be available from the _____.

5) The company is obliged to cover the cost of _____ if you need them while working.   **2x5**

Q.3   **Writing Task 1:**

Write atleast 150 words about the following topic:

In some countries young people have little leisure time and are under a lot of pressure to work hard in their studies.

What do you think are the causes of this?

What solutions can you suggest?

Give reasons for your answer and include any relevant examples from your own knowledge or experience.
        15

Q.4   **Writing Task 2:**
You are studying a short course in another country. Your accommodation was arranged by the course provider. There is a major problem with the

accommodation.
Write a letter (at least 150 words.) to the course provider. In your letter:

- Say what the problem is.

- Describe the accommodation you thought you were getting.

- Ask the provider to solve the problem. **15**

End Semester Examination, Dec. 2017
B. Sc (IT) – Second Semester
ENGLISH FOR ACADEMIC PURPOSES-II (EAP-IIB)

Time: 3 hrs. Max Marks: **50**
No. of pages: 5

Note: *All questions are **compulsory:***

Q.1   Read the passage and answer the questions that follow:

Do the following statements agree with the information given in the passage?
Write:

TRUE if the statement is true according to the passage.

FALSE if the statement is false according to the passage.

NOT GIVEN if the information is not given in the passage.

a. The club has long-term dormitory accommodation.

b. There's no accommodation for married members.

c. The club provides subsidized restaurant meals.

d. The club is open to non-members on Tuesday evenings.

e. STA Travel helps finance the Students' Adviser.

f. The services of the Students' Adviser are free to all club members.

g. You must make an appointment to see the Students' Adviser.

h. There will be a surcharge for accommodation over the Christmas period. **1x8**

INTERNATIONAL STUDENTS' HOUSE

International Students House is a unique club and accommodation centre for British and overseas students in London. It is located in the heart of London's West End and is close to all public transport facilities.

ACCOMMODATION

» Comfortable accommodation for up to 450 people in single, twin, 3/4 bedded and multi-bedded rooms

» 44 self-contained flats for married students and families

» Long and short stays welcomed

MEMBERSHIP

Club membership is open to all full-time students, professional trainees, student nurses and au pairs. Membership costs are kept to an absolute minimum to enable the widest possible access. You can join for as little as one month and for up to one year at a time. Membership entitles you to use the various facilities of the House. It has:

• Restaurants

- Student bars and coffee shop

- Study rooms

- Clubs and societies

- Aerobics and fitness training

- Discos, dance, jazz and cinema

- Travel and excursions and much more!

The best way to check out all we have on offer is to drop in any Tuesday evening between 7.15 pm and 8.30 pm for **Open House** in the Club Room. This is an opportunity for you to meet the staff and other club members, enjoy a free cup of coffee and find out all about what's going on. You can take advantage of special membership offers. (Useful tip: bring along 3 passport size photographs if you wish to take out membership.)

ADVICE SERVICE

Thanks to the support of STA Travel and in association with LCOS (the London Conference on Overseas Students), International Students House now provides the service of an International Students Adviser. This new welfare service is open to all students at London's bona-fide academic institutions. It aims to provide welfare support to help students overcome any personal or practical difficulties they may be experiencing whilst studying in Britain. One of the key features of the Advice Service is that the Adviser can be seen during the evenings until about 8 pm, Monday to Thursday.

CHRISTMAS & NEW YEAR

Unable to get home for Christmas? How about joining in the fun at International Students House! Check out our special programme of activity taking place over the Christmas period. Even come and stay - the House will be offering reduced accommodation rates for students wishing to spend a few days in London over Christmas. We'll also have an exciting New Year's Eve party so come and join us and ring in the new year in the spirit of internationalism.

Q.2   Read the passage and answer the questions that follow it:

Part A

To make political decisions about the extent and type of forestry in a region, it is important to understand the consequences of those decisions. One tool for assessing the impact of forestry on the ecosystem is population viability analysis (PVA). This is a tool for predicting the probability that a species will become extinct in a particular region over a specific period. It has been

successfully used in the United States to provide input into resource exploitation decisions and assist wildlife managers and there is now enormous potential for using population viability to assist wildlife management in Australia's forests. A species becomes extinct when the last individual dies. This observation is a useful starting point for any discussion of extinction as it highlights the role of luck and chance in the extinction process. To make a prediction about extinction we need to understand the processes that can contribute to it and these fall into four broad categories which are discussed below.

Part B

A) Early attempts to predict population viability were based on demographic uncertainty whether an individual survives from one year to the next will largely be a matter of chance. Some pairs may produce several young in a single year while others may produce none in that same year. Small populations will fluctuate enormously because of the random nature of birth and death and these chance fluctuations can cause species extinctions even if, on average, the population size should increase. Taking only this uncertainty of ability to reproduce into account, extinction is unlikely if the number of individuals in a population is above about 50 and the population is growing.

B) Small populations cannot avoid a certain amount of inbreeding. This is particularly true if there is a very small number of one sex. For example, if there are only 20 individuals of a species and only one is a male, all future individuals in the species must be descended from that one male. For most animal species such individuals are less likely to survive and reproduce. Inbreeding increases the chance of extinction.

C) Variation within a species is the raw material upon which natural selection acts. Without genetic variability, a species lacks the capacity to evolve and cannot adapt to changes in its environment or to new predators and new diseases. The loss of genetic diversity associated with reductions in population size will contribute to the likelihood of extinction.

D) Recent research has shown that other factors need to be considered. Australia's environment fluctuates enormously from year to year. These fluctuations add yet another degree of uncertainty to the survival of many species. Catastrophes such as fire, flood, drought or epidemic may reduce population sizes to a small fraction of their average level. When allowance is made for these two additional elements of uncertainty the population size necessary to be confident of persistence for a few hundred years may increase to several thousand.

Part C

Besides these processes, we need to bear in mind the distribution of a population. A species that occurs in five isolated places each containing 20 individuals will not have the same probability of extinction as a species with a single population of 100 individuals in a single locality. Where logging occurs (that is, the cutting down of forests for timber), forest-dependent creatures in that area will be forced to leave. Ground-dwelling herbivores may return within a decade. However, arboreal marsupials (that is animals which live in trees) may not recover to pre-logging densities for over a century. As more forests are logged, animal population sizes will be reduced further. Regardless of the theory or model that we choose, a reduction in population size decreases the genetic diversity of a population and increases

the probability of extinction because of any or all of the processes listed above. It is therefore, a scientific fact that increasing the area that is loaded in any region will increase the probability that forest-dependent animals will become extinct.

Questions (i) – (iv)

Do the following statements agree with the views of the writer in *Part A* of Reading Passage? Write

YES   if the statement agrees with the writer
NO   if the statement contradicts the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

i.   Scientists are interested in the effect of forestry on native animals.
ii. PVA has been used in Australia for many years.
iii. A species is said to be extinct when only one individual exists.
iv. Extinction is a naturally occurring phenomenon.   **1x4**

Questions (v) – (viii)

This relates to *Part B* of the reading passage. In paragraphs **A** to **D,** the author describes four processes which may contribute to the extinction of a species. Match the list of processes (a-f) to the paragraphs. There are more processes given below as compared to the number of paragraphs so you will not use all of them.   **1x4**

v.	Paragraph A	a. Loss of ability to adapt
vi.	Paragraph B	b. Natural disasters
		c. An imbalance of the sexes
vii.	Paragraph C	d. Human disasters
		e. Evolution
viii.	Paragraph D	f. The haphazard nature of reproduction

Questions (ix) – (xi)

Based on your reading of Part C, fill in the below with words appearing in the passage. Use **NO MORE THAN THREE WORDS** for each answer.
While the population of a species may be on the increase, there is always a chance that small isolated groups **..........** **(ix)** **..........** Survival of a species depends on a balance between the size of a population and its **..........** **(x)** **.........** The likelihood that animals which live in forests will become extinct is increased when **..........** **(xi)** **...........**
1x3
Question (xii)

An alternative heading for the passage could be:
a. The protection of native flora and fauna.
b. Influential factors in assessing survival probability.
c. An economic rationale for the logging of forests.

d. Preventive measures for the extinction of a species.   **1x1**

Q.3 Match the following words with their antonyms:

Column A	Column B
1. abundant	a. deny
2. admit	b. cowardly
3. antonym	c. ajar
4. artificial	d. discouraged, dreary
5. attractive	e. limited
6. brave	f. repulsive
7. boundless	g. voluntary
8. cheerful	h. synonym
9. closed	i. scarce
10. compulsory	j. natural

10

Q.4 **Writing Task-1**

Write about the following topic
"The Central Board of Secondary Education (CBSE) has decided to go back to its once criticized compulsory three language formula. According to this system, which will be levied on students appearing board exams of class X after the year 2020, they will have to study three Indian languages. English can be one of the languages and the other two will be chosen from the list of regional Indian languages. Foreign language will be an alternate subject which can be learnt vocationally but will not be subject to being counted in their final grades"
To what extent do you agree or disagree with this opinion?
Write at least 250 words.   **10**

Q.5 **Writing Task 2**

You are an avid reader and have subscribed to various newspapers and weekly magazines. You have realized that you have always paid proper subscription amount but for the past couple of months, the vendor has been missing out on delivering one or the other magazine repetitively. Write a letter to your newspaper agency, complaining about their improper services.
Write a letter and in the letter
• Describe the situation
• Explain why is it a problem
• Say what action would you take if the issue is not resolved
Write at least 200 words and use proper format for the letter.   **10**

End Semester Examination, Dec. 2017

B. Sc. (Information Technology) — First Semester
INFORMATION TECHNOLOGY SYSTEM (7.101)

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**. Each question carries equal marks.*

Q.1   Answer the following:
  a) A light sensitive device that converts drawing, printed text or other images into digital form is called _____.
  b) Which protocol provides e-mail facility among different hosts:
      i)   FTP.
      ii)   SMTP.
      iii) TELNET.
      iv) SNMP.
  c) _____ is the time during which a job is processed by the computer.
  d) MICR stands for _____.
  e) Who invented the super computer?
  f) Which of the following operating system is produced by IBM:
      i)   OS-2

  ii) Windows.
  iii) DOS.
  iv) UNIX.
 g) When was the first e-mail sent:
  i) 1963.
  ii) 1969.
  iii) 1971.
  iv) 1974.
 h) Combination of two or more networks are called _____.
 i) A communication pathway that transfers data from one point to another is called _____.
 j) _____ performs modulation and demodulation.   **1½×10**

PART-A

Q.2 Write short notes on:
 a) Types of ports.
 b) System unit and its explanation.
 c) Internet technologies.   **5×3**

Q.3 a) Compare the five generations of computers on the basis of software technology used.   **8**
 b) Write a detailed note on internet and its importance. **7**

Q.4 What are the various input-output devices available? Explain, in detail. **15**

PART-B

Q.5 a) Explain computer virus. What are the various types of threats that can be faced by computer system?   **10**

 b) How do header and footer can be inserted in a document? Explain its steps.   **5**

Q.7 Write short notes on the following in Excel:
 a) Data Sorting.
 b) Pivot Table.
 c) Goal Seek.   **5×3**

Q.7 a) How animations of various types can be applied in power point presentation? Discuss all methods, in detail. **10**
 b) Write the steps for creating a table in MS-Access. **5**

End Semester Examination, Dec. 2017
B. Sc. (IT) - Fifth Semester
E-COMMERCE (BSCA-002)

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   Answer the following:

a) What is the percentage of customers who visit a website and actually buy something called:
   i) Affiliate programs   ii) Click-through   iii) Spam   iv) Conversion rate

b) Which is not a function of E-commerce:
   i) Marketing   ii) Advertising   iii) Warehousing   iv) None   of these

c) Which of the following describes e-commerce?
   i) Doing business electronically   ii) Doing business
   iii) Sale of goods   iv) All of the above

d) Which of the following is part of the four main types for e-commerce:
   i) B2B   ii) B2C   iii) C2B   iv) All of these

e) Which segment do eBay, Amazon.com belong?
   i) B2Bs   ii) B2Cs   iii) C2Bs   iv) C2Cs

f) Which type of e-commerce focuses on consumers dealing with each other:
   i) B2B   ii) B2C   iii) C2B   iv) C2C

g) Which products are people most likely to be comfortable buying on the Internet:
   i) Books   ii) PCs   iii) CDs   iv) All of these.

h) Most individuals are familiar with which form of e-commerce:
   i) B2B   ii) B2C   iii) C2B   iv) C2C

i) Which of the following is a useful security mechanism when considering business strategy and IT:
   i) Encryption   ii) Decryption   iii) Firewall   iv) All of these

j) Which of the following is not related to security mechanism:
   i) Encryption   ii) Decryption   iii) E-cash   iv) All of the these

2x10

PART-A

Q.2 a) "The flourishing of e-commerce business have changed the Indian shopping pattern." List five advantages of e-commerce for an individual.
   10

   b) Explain the different types of e-commerce.
   10

Q.3 What are 4 C's of e-commerce? Explain in detail.
   20

Q.4 a) What is digital signature and what is its utility?
   10

   b) Write a case study on the latest cyber-attack, giving the source of origin, purpose and impact caused by the attack.
   10

PART-B

Q.5 a) What is ERP and its scope?
   10

   b) What is Supply Chain Management? What is its utility for an organization?
   10

Q.6 Discuss the case study of "Amazon" as a successful e-commerce portal.
   20

Q.7 a) Write five advantages and five disadvantages of ERP.
   10

   b) What is electronic marketing?

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Fifth Semester
INTELLIGENT AGENTS (BSCA-501)

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 Answer the following:
   a) Define Robotics. **4**
   b) What is commonly used programming language for AI _____? **2**
   c) What is a state space? **4**
   d) Which search method takes less memory? **2**
   e) A heuristic is way of _____. **4**
   f) Which predicate logic is applied on "All dogs have fails." **4**

PART-A

Q.2 What kind of techniques will be used for solving AI problems? **20**

Q.3 a) Differentiate between blind search techniques and heuristic search techniques. **10**
   b) Solve cryptarithmetic puzzle:
      SEND
      +MORE
      MONEY **10**

Q.4 a) Why it is appropriate to use predicate logic than propositional calculus?**10**
   b) Explain the unification algorithm. Trace operation of unification algorithm:
      i) f (Marcus) and f (Caesar).
      ii) f *(x) and (* f *(g(y))*. **5×2**

PART-B

Q.5 a) Differentiate between forward and backward reasoning. **10**
   b) Define and explain Conflict Resolution. **10**

Q.6 Explain Bayesian probability network. Discuss Bayes theorem with an example. **20**

Q.7 With the help of a diagram, explain expert system architecture. List and discuss applications of expert system. **20**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Fifth Semester
INTERACTIVE COMPUTER GRAPHICS (BSCA-502)

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   Answer the following in brief:
a) Define JPEG.
b) Describe the definition of computer graphics.
c) Explain PHIGS.
d) Name three algorithms of scan conversion line drawing.
e) Define point, pixel and circle.
f) Discuss the use of computer graphics in education and training.
g) What is translation? Define its homogenous co-ordinates.
h) What is projection? Name the two types of projections.
i) Define window to viewport mapping.
j) Define various polygon fill algorithm.   **2×10**

PART-A

Q.2   a) What is computer graphics? What is the difference between computer graphics and image processing?   **10**
b) Write short notes on:
   i)   Computer aided design.   **4**
   ii) Computer Art.   **3**
   iii) Entertainment.   **3**

Q.3   a) Draw a line from (0, 0) to (6, 6) and another line from (0, 0) to (20, 10), using the DDA line drawing algorithm.   **10**
b) Plot a line with end points (20, 10) and (30, 18), using Bresenham line drawing algorithm.   **10**

Q.4   Find out the pixel location of a circle having centre at (0, 0) and radius is 8, using Bresenhams circle drawing algorithm.   **20**

PART-B

Q.5   Write down the geometric representation in homogenous co-ordinates in all basic transformations. Translate a triangle with vertices A (2, 2), B (5, 2) and C (5, 5) by 3 units in x-axis and 2 units in y-axis.   **20**

Q.6   What is projection? Explain its different types. Compare parallel and perspective projections with reference to real world.   **20**

Q.7   Define terms viewplane and window. Describe Cohen-Sutherland algorithm for line clipping.   **20**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) -Fifth Semester
MULTIMEDIA SYSTEMS (BSCA-503)

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 **Unit-I** and **TWO** questions from **Unit-II**. All questions carry equal marks.*

Q.1   Choose the correct option:
- a) _____ audio/video refers to the use of the Internet for interactive audio/video applications:
  - i) Interactive.
  - ii) Streaming live.
  - iii) Streaming stored.
  - iv) None of the above.
- b) According to the Nyquist theorem, we need to sample an analog signal _____ times the highest frequency:
  - i) three.
  - ii) two.
  - iii) four.
  - iv) none of the above.
- c) _____ is an application protocol that establishes, manages, and terminates a multimedia session:
  - i) RIP
  - ii) SIP
  - iii) DIP
  - iv) none of the above.
- d) A _____ shows the time a packet was produced relative to the first or previous packet.
  - i) timestamp
  - ii) playback buffer
  - iii) sequence number
  - iv) none of the above
- e) The first phase of JPEG is:
  - i) DCT transformation
  - ii) quantization.
  - iii) data compression
  - iv) none of the above
- f) _____ encoding is based on the science of psychoacoustics, which is the study of how people perceive sound:
  - i) Predictive.
  - ii) Perceptual.
  - iii) both i) and ii)
  - iv) none of the above
- g) _____ is used to compress images:
  - i) MPEG
  - ii) JPEG
  - iii) either i) or ii)
  - iv) none of the above
- h) MIDI stands for:
  - i) Musical Instrument Digital Interface.
  - ii) Musical Instrument Digital Instruction.
  - iii) MP3 Instrument Digital Interface.
  - iv) Musical Instrument Design Interface.
  - v) Multimedia Instrument Digital Interface.
- i) Space between lines is called:
  - i) Leading.
  - ii) Kerning.
  - iii) Extrude.
  - iv) Expanded
  - v) Font Mapping.
- j) Which of these is not likely to be the responsibility of a multimedia project?
  - i) Create interfaces.
  - ii) Ensure the visual consistency of the project.
  - iii) Structure content.
  - iv) Create budgets and timelines for the project.
  - v) Select media types for content.   **2x10**

UNIT-I

Q.2   a) Define Multimedia. Mention the various applications and need of Multimedia in current IT scenario. **10**
    b) What is a Multimedia project and what are the roles of different team members. **10**

Q.3   a) Which basic Tools and software of multimedia are commonly used?   **10**
    b) How is plain text different from formatted text?   **10**

Q.4   Write short notes on *(any two)* of the following:
- a) Bitmap graphics vs. Vector graphics.
- b) GIF vs. JPEG.
- c) Graphics image sources.
- d) Graphics on internet.   **10x2**

UNIT-II

Q.5   a) Compression of data has made storage comfortable and economic. Elaborate.   **10**
    b) Differentiate between lossy and lossless compression with their application in real life situation.   **10**

Q.6 a) How is Hoffman coding different from Arithmetic coding? Explain with proper diagrams.
10

b) When and why do we use Differential Encoding in compression? **10**

Q.7 a) Mention the various principles of animation in multimedia. **10**

b) Name the different softwares used for 2 D animation and 3D animation. **10**

End Semester Examination, Dec. 2017
B. Sc. (ID) — Fifth Semester
ENTREPRENEURSHIP DEVELOPMENT (COM-O306)

Time: 3 hrs.   Max Marks: **100**
                                                                            No. of pages: 1
Note: *Attempt **FIVE** questions in all; **Q.1 is compulsory.** Attempt **ANY FOUR** questions from the*
        remaining out of five questions. Each question carries equal marks.

Q.1   Write short notes on the following:
       a) Significance of forecasting.
       b) Entrepreneurial Qualities.
       c) Creating value proposition for customer.
       d) Difference between Team and Group.
       e) Sources of finance.   **4x5**

Q.2   Describe the different forms of business and state the importance of generating new business
       idea.   **20**

Q.3   How do you safeguard your business by undertaking following analysis?
       a) Market Research
       b) Industry and competitor analysis.   **20**

Q.4   Explain the process of management. Why control is vital function?   **20**

Q.5   What sort of risks any start up faces and what are the methods to assess it?   **20**

Q.6   Describe the various sources of finance available for any business enterprise. Which will be most
       appropriate source of funding for new venture and why?   **20**

End Semester Examination, Dec. 2017
B.Sc. (IT) – First Semester
ENGLISH FOR ACADEMIC PURPOSES-IIA (EAP-IIA)

Time: 3 hrs.   Max Marks: **50**

Note: *All questions are* **compulsory**:

Q.1   Read the passage and answer the following questions:

Is Science Dangerous?

The idea that scientific knowledge is dangerous is deeply embedded in our culture. Adam and Eve were forbidden to eat from the Tree of Knowledge, and in Milton's Paradise Lost the serpent addresses the tree as the 'Mother of Science'. Indeed the whole of western literature has not been kind to scientists and is filled with images of them meddling with nature with disastrous results. Just consider Shelley's Frankenstein, Goethe's Faust and Huxley's Brave New World. One will search with very little success for a novel in which scientists come out well - the persistent image is that of scientists as a soulless group unconcerned with ethical issues. And where is there a film sympathetic to science?

Part of the problem is the conflation of science and technology. The distinction between science and technology, between knowledge and understanding on the one hand and the application of that knowledge to making something, or using it in some practical way, is fundamental.

Science produces ideas about how the world works, whereas the ideas in technology result in usable objects. Technology is much older than anything one could regard as science and unaided by any science. Technology gave rise to the crafts of early humans, like agriculture and metalworking. It is technology that carries with it ethical issues, from motorcar production to cloning a human.

By contrast, reliable scientific knowledge is value-free and has no moral or ethical value. Science merely tells us how the world is. That we are not at the centre of the universe is neither good nor bad, nor is the possibility that genes can influence our intelligence or our behaviour.

The social obligations that scientists have as distinct from those responsibilities they share with all citizens comes from them having access to specialised knowledge of how the world works, not easily accessible to others. Their obligation is to both make public any social implications of their work and its possible applications and to give some assessment of its reliability.

It is not easy to find examples of scientists as a group behaving immorally or in a dangerous manner, the classic paradigm being the eugenics movement. The scientific assumptions behind this proposal are crucial; the assumption is that most desirable and undesirable human attributes are inherited. Not only was talent perceived of as being inherited, but so too were insanity and any kind of so-called feeblemindedness. They completely failed to give an assessment of the reliability of their ideas. Quite the contrary, and even more blameworthy, their conclusions seem to have been driven by what they saw as the desirable social implications. By contrast, in relation to the building of the atomic bomb, scientists behaved morally and fulfilled their social obligations by informing their governments about the implications of atomic theory. It was an enormous engineering feat to build the bomb but the decision to do this was taken by politicians, not scientists.

The moralists have been out in force telling us of the horrors of cloning. Many others, national leaders included, have joined in a chorus of horror. But

what horrors? What ethical issues? In all the righteous indignation not a single relevant new ethical issue has been spelled out.

Those who propose to clone a human are medical technologists not scientists. It is not, as the bio-moralists claim, that scientific innovation has outstripped our social and moral codes. Just the opposite is the case. Their obsession with the life of the embryo has deflected our attention away from the real issue, which is how children are raised and nurtured. The ills in our society have nothing to do with assisting or preventing reproduction but are profoundly affected by how children are treated.

So what danger does genetics pose? Gene therapy, introducing genes to cure a genetic disease like cystic fibrosis, carries risks, as do all new medical treatments. There may well be problems with the testing of new treatments, but are these difficulties any different from those related to trying out new drugs for AIDS? Anxieties about creating designer babies are at present premature as it is too risky, and we may have, in the first instance, to accept what has been called procreative autonomy, a couple's right to control their own role in reproduction unless the state has a compelling reason for denying them that control. Should the ethical issues relating to the applications of genetics, for example, lead to stopping research in this field? The individual scientist cannot decide, for science, like genetics, is a collective activity with no single individual controlling the process of discovery. It is ethically unacceptable and impractical to censor any aspect of trying to understand the nature of our world.

Do the following statements agree with the information given in the passage?

*In boxes **1-5** on your answer sheet, write*

>   **TRUE**   *if the statement is true according to the passage*

>   **FALSE**   *if the statement is false according to the passage*

>   **NOT GIVEN**   *if the information is not given in the passage*

6) The film industry does not make films about science.

7) Scientists do not work in unison when deciding what needs to be researched.

8) Parents want to have cloned children now.

9) Technology was important before the development of science.

10)   Many people consider cloning to be undesirable.
    10

Q.2   Read the passage and answer the following questions:

Advice for Employees

Most people suffer no ill-effects from using VDUs (Visual Display Units) as they don't give out harmful levels of radiation and rarely cause any kind of skin complaint. If you do suffer ill-effects, it may be because of the way you're using the computer and this can be avoided by well-designed workstations. When working at a VDU, make sure you keep a good posture and that your eyes are level with the screen.

Under health and safety regulations your employer should look at VDU workstations, and reduce any risks by supplying any equipment considered necessary (e.g. a wrist rest). They should also provide health and safety training. This also applies if you're working at home as an employee and using a VDU for a long period of time. There is no legal limit to how long you should work at a VDU, but under health and safety regulations you have the right to breaks from work using a VDU. This doesn't have to be a rest break, just a different type of work. Guidance from the Health and Safety Executive (HSE) suggests it's better to take frequent short breaks but if your job means spending long periods at a VDU, for example as in the case of data input, then longer breaks from your workstation should be introduced.

If you're disabled, your employer's duty to make reasonable adjustments for you may mean that they will provide you with special computer equipment. You can also get advice and maybe help with paying for equipment from the local job centre. Studies haven't shown a link between VDU use and damage to eyesight, but if you feel that using a VDU screen is making your eyes tired, tell your employee safety representative. You have the right to a free eyesight test if you use a VDU a lot during work hours. If you're prescribed glasses your company must pay for them, provided they're required in your job.

If you have any health problems you think may be caused by your VDU, contact your line manager. He/she has a duty to consult you on health and safety issues that affect you, and should welcome early reporting of any issue.

Complete the sentences below.

Choose **NOT MORE THAN THREE WORDS** from the passage for each answer.
Write your answers in boxes **1-5** on your answer sheet.

6) It is unusual to get a _____ as a result of using computers.

7) Employers may be required to provide you with items such as a _____ to use while at work.

8) If your job involves tasks such as _____, the advice from the HSE may not apply.

9) Financial assistance in the case of special requirements may be available from the _____.

10) The company is obliged to cover the cost of _____ if you need them while working. **2x5**

Q.3 **Writing Task 1:**

Write atleast 150 words about the following topic:

In some countries young people have little leisure time and are under a lot of pressure to work hard in their studies.

What do you think are the causes of this?

What solutions can you suggest?

Give reasons for your answer and include any relevant examples from your own knowledge or experience.
15

Q.4 **Writing Task 2:**
You are studying a short course in another country. Your accommodation was arranged by the course provider. There is a major problem with the accommodation.
Write a letter (at least 150 words.) to the course provider. In your letter:

• Say what the problem is.

• Describe the accommodation you thought you were getting.

• Ask the provider to solve the problem. **15**

End Semester Examination, Dec. 2017
B. Sc (IT) – Second Semester
ENGLISH FOR ACADEMIC PURPOSES-II (EAP-IIB)

Time: 3 hrs.

Max Marks: **50**

No. of pages: 5

Note: *All questions are* ***compulsory:***

Q.1   Read the passage and answer the questions that follow:

Do the following statements agree with the information given in the passage?
Write:

TRUE *if the statement is true according to the passage.*

FALSE *if the statement is false according to the passage.*

NOT GIVEN *if the information is not given in the passage.*

i.   The club has long-term dormitory accommodation.

j.   There's no accommodation for married members.

k.   The club provides subsidized restaurant meals.

l.   The club is open to non-members on Tuesday evenings.

m. STA Travel helps finance the Students' Adviser.

n.   The services of the Students' Adviser are free to all club members.

o.   You must make an appointment to see the Students' Adviser.

p.   There will be a surcharge for accommodation over the Christmas period.   **1x8**

INTERNATIONAL STUDENTS' HOUSE

International Students House is a unique club and accommodation centre for British and overseas students in London. It is located in the heart of London's West End and is close to all public transport facilities.

ACCOMMODATION

» Comfortable accommodation for up to 450 people in single, twin, 3/4 bedded and multi-bedded rooms

» 44 self-contained flats for married students and families

» Long and short stays welcomed

MEMBERSHIP

Club membership is open to all full-time students, professional trainees, student nurses and au pairs. Membership costs are kept to an absolute minimum to enable the widest possible access. You can join for as little as one month and for up to one year at a time. Membership entitles you to use the various facilities of the House. It has:

- Restaurants

- Student bars and coffee shop

- Study rooms

- Clubs and societies

- Aerobics and fitness training

- Discos, dance, jazz and cinema

- Travel and excursions and much more!

The best way to check out all we have on offer is to drop in any Tuesday evening between 7.15 pm and 8.30 pm for **Open House** in the Club Room. This is an opportunity for you to meet the staff and other club members, enjoy a free cup of coffee and find out all about what's going on. You can take advantage of special membership offers. (Useful tip: bring along 3 passport size photographs if you wish to take out membership.)

ADVICE SERVICE

Thanks to the support of STA Travel and in association with LCOS (the London Conference on Overseas Students), International Students House now provides the service of an International Students Adviser. This new welfare service is open to all students at London's bona-fide academic institutions. It aims to provide welfare support to help students overcome any personal or practical difficulties they may be experiencing whilst studying in Britain. One

of the key features of the Advice Service is that the Adviser can be seen during the evenings until about 8 pm, Monday to Thursday.

CHRISTMAS & NEW YEAR

Unable to get home for Christmas? How about joining in the fun at International Students House! Check out our special programme of activity taking place over the Christmas period. Even come and stay - the House will be offering reduced accommodation rates for students wishing to spend a few days in London over Christmas. We'll also have an exciting New Year's Eve party so come and join us and ring in the new year in the spirit of internationalism.

Q.2   Read the passage and answer the questions that follow it:

Part A

To make political decisions about the extent and type of forestry in a region, it is important to understand the consequences of those decisions. One tool for assessing the impact of forestry on the ecosystem is population viability analysis (PVA). This is a tool for predicting the probability that a species will become extinct in a particular region over a specific period. It has been successfully used in the United States to provide input into resource exploitation decisions and assist wildlife managers and there is now enormous potential for using population viability to assist wildlife management in Australia's forests. A species becomes extinct when the last individual dies. This observation is a useful starting point for any discussion of extinction as it highlights the role of luck and chance in the extinction process. To make a prediction about extinction we need to understand the processes that can contribute to it and these fall into four broad categories which are discussed below.

Part B

A) Early attempts to predict population viability were based on demographic uncertainty whether an individual survives from one year to the next will largely be a matter of chance. Some pairs may produce several young in a single year while others may produce none in that same year. Small populations will fluctuate enormously because of the random nature of birth and death and these chance fluctuations can cause species extinctions even if, on average, the population size should increase. Taking only this uncertainty of ability to reproduce into account, extinction is unlikely if the number of individuals in a population is above about 50 and the population is growing.

B) Small populations cannot avoid a certain amount of inbreeding. This is particularly true if there is a very small number of one sex. For example, if there are only 20 individuals of a species and only one is a male, all future individuals in the species must be descended from that one male. For most animal species such individuals are less likely to survive and reproduce. Inbreeding increases the chance of extinction.

C) Variation within a species is the raw material upon which natural selection acts. Without genetic variability, a species lacks the capacity to evolve and cannot adapt to changes in its environment or to new predators and new diseases. The loss of genetic diversity associated with reductions in population size will contribute to the likelihood of extinction.

D) Recent research has shown that other factors need to be considered. Australia's environment fluctuates enormously from year to year. These fluctuations add yet another degree of uncertainty to the survival of many species. Catastrophes such as fire, flood, drought or epidemic may reduce population sizes to a small fraction of their average level. When allowance is made for these two additional elements of uncertainty the population size necessary to be confident of persistence for a few hundred years may increase to several thousand.

Part C

Besides these processes, we need to bear in mind the distribution of a population. A species that occurs in five isolated places each containing 20 individuals will not have the same probability of extinction as a species with a single population of 100 individuals in a single locality. Where logging occurs (that is, the cutting down of forests for timber), forest-dependent creatures in that area will be forced to leave. Ground-dwelling herbivores may return within a decade. However, arboreal marsupials (that is animals which live in trees) may not recover to pre-logging densities for over a century. As more forests are logged, animal population sizes will be reduced further. Regardless of the theory or model that we choose, a reduction in population size decreases the genetic diversity of a population and increases the probability of extinction because of any or all of the processes listed above. It is therefore, a scientific fact that increasing the area that is loaded in any region will increase the probability that forest-dependent animals will become extinct.

Questions (i) – (iv)

Do the following statements agree with the views of the writer in *Part A* of Reading Passage? Write

YES   if the statement agrees with the writer
NO   if the statement contradicts the writer
NOT GIVEN   if it is impossible to say what the writer thinks about this

  ix. Scientists are interested in the effect of forestry on native animals.
   x. PVA has been used in Australia for many years.
  xi. A species is said to be extinct when only one individual exists.
 xii. Extinction is a naturally occurring phenomenon.   **1x4**

Questions (v) – (viii)

This relates to *Part B* of the reading passage. In paragraphs **A** to **D,** the author describes four processes which may contribute to the extinction of a species. Match the list of processes (a-f) to the paragraphs. There are more processes given below as compared to the number of paragraphs so you will not use all of them.   **1x4**

| xiii. | Paragraph A | g. Loss of ability to adapt |
| | | h.   Natural disasters |

xiv.	Paragraph B	i. An imbalance of the sexes
		j. Human disasters
xv.	Paragraph C	k. Evolution
		l. The haphazard nature of reproduction
xvi.	Paragraph D	

Questions (ix) – (xi)

Based on your reading of Part C, fill in the below with words appearing in the passage. Use **NO MORE THAN THREE WORDS** for each answer.
While the population of a species may be on the increase, there is always a chance that small isolated groups **..........** **(ix)** **..........** Survival of a species depends on a balance between the size of a population and its **..........** **(x)** **.........** The likelihood that animals which live in forests will become extinct is increased when **..........** **(xi)** **............**
1x3

Question (xii)

An alternative heading for the passage could be:
d. The protection of native flora and fauna.
e. Influential factors in assessing survival probability.
f. An economic rationale for the logging of forests.
d. Preventive measures for the extinction of a species.   **1x1**

Q.3   Match the following words with their antonyms:

Column A	Column B
11. abundant	k. deny
12. admit	l. cowardly
13. antonym	m. ajar
14. artificial	n. discouraged, dreary
15. attractive	o. limited
16. brave	p. repulsive
17. boundless	q. voluntary
18. cheerful	r. synonym
19. closed	s. scarce
20. compulsory	t. natural

10

Q.4   **Writing Task-1**

Write about the following topic
"The Central Board of Secondary Education (CBSE) has decided to go back to its once criticized compulsory three language formula. According to this system, which will be levied on students appearing board exams of class X after the year 2020, they will have to study three Indian languages. English can be one of the languages and the other two will be chosen from the list of regional Indian languages. Foreign language will be an alternate subject which can be learnt vocationally but will not be subject to being counted in their final grades"
To what extent do you agree or disagree with this opinion?
Write at least 250 words.   **10**

Q.5 **Writing Task 2**

You are an avid reader and have subscribed to various newspapers and weekly magazines. You have realized that you have always paid proper subscription amount but for the past couple of months, the vendor has been missing out on delivering one or the other magazine repetitively. Write a letter to your newspaper agency, complaining about their improper services. Write a letter and in the letter
- Describe the situation
- Explain why is it a problem
- Say what action would you take if the issue is not resolved

Write at least 200 words and use proper format for the letter.   **10**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) — First Semester
INFORMATION TECHNOLOGY SYSTEM (7.101)

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**. *Each question carries equal marks.*

Q.1   Answer the following:
   a) A light sensitive device that converts drawing, printed text or other images into digital form is called _____.
   b) Which protocol provides e-mail facility among different hosts:
      i)   FTP.
      ii) SMTP.
      iii) TELNET.
      iv) SNMP.
   c) _____ is the time during which a job is processed by the computer.
   d) MICR stands for _____.
   e) Who invented the super computer?
   f) Which of the following operating system is produced by IBM:
      i)   OS-2
      ii) Windows.
      iii) DOS.
      iv) UNIX.
   g) When was the first e-mail sent:
      i)   1963.
      ii) 1969.
      iii) 1971.
      iv) 1974.
   h) Combination of two or more networks are called _____.
   i) A communication pathway that transfers data from one point to another is called _____.
   j) _____ performs modulation and demodulation.   **1½×10**

PART-A

Q.2   Write short notes on:
   a) Types of ports.
   b) System unit and its explanation.
   c) Internet technologies.   **5×3**

Q.3   a) Compare the five generations of computers on the basis of software technology used.   **8**
   b) Write a detailed note on internet and its importance.   **7**

Q.4   What are the various input-output devices available? Explain, in detail.   **15**

PART-B

Q.5   a) Explain computer virus. What are the various types of threats that can be faced by computer system?   **10**

   b) How do header and footer can be inserted in a document? Explain its steps.   **5**

Q.7 Write short notes on the following in Excel:
   a) Data Sorting.
   b) Pivot Table.
   c) Goal Seek.   **5×3**

Q.7 a) How animations of various types can be applied in power point presentation? Discuss all methods, in detail.   **10**
   b) Write the steps for creating a table in MS-Access.   **5**

End Semester Examination, Dec. 2017

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**. *Each question*
      carries equal marks.

Q.1   Choose the correct option:
       a) Which of the following statements are true with respect to
"Communication"?
            i)   It forms the foundation for planning.
            ii)   Controlling is not possible without written and oral communication.
            iii) Both i) and ii).
            iv)   None of the above.   **1**
       b) In formal letters to have a desired effect on the reader, it should be:
            i)   Free of any grammatical or spelling errors.
            ii)   Polite, even if you are complaining.
            iii) Short and to the point.
            iv)   All of the above.   **1**
       c) The goal of a negotiation process should always be:
            i)   We should be able to judge and use the vulnerability of the other
party.
            ii)   We should be able to sell the products at our specified price.
            iii) A win-win situation wherein both the parties are satisfied.
            iv)   There may/may not be any future business relationship.   **1**
       d) Disruptive behavior in a team means:
            i)   Being overly aggressive.
            ii)   Withdrawing and refusing to co-operate.
            iii) Raising irrelevant matters.
            iv)   All of the above.   **1**
       e) The non-verbal communication displayed by attitude towards time,
          through punctuality and late arrival is called:
            i)   Haptics.
            ii)   Chronemics.
            iii) Vocalics.
            iv)   Proxemics.   **1**
       f) State whether the following statements are **TRUE** or **FALSE:**
            i)   Only 7% of what we communicate is through body language.
            ii)   The entering of sound waves into our ears and striking the eardrums is
                  called hearing.
            iii) The tone of our voice conveys our mood, interest, anger etc. to the
audience.
            iv)   An agenda has to be circulated in advance for meetings.
            v)   While listening to a song, we do the "Empathetic" type of listening.
            1×5

PART-A

Q.2   What is communication? Explain the communication process in detail. Also
       discuss the various barriers to communication.   **10**

Q.3   "Making an effective presentation is an art which can be mastered with some
       preparation." Explain in detail.   **10**
Q.4.   a) What are listening skills? How is listening different from hearing?

b) Explain the various types of listening with examples. **5×2**

PART-B

Q.5   What is non-verbal communication? Illustrate with suitable examples. Explain the various components of non-verbal communication in detail. **10**

Q.6   a) Why does formal letter writing still hold its relevance in the age of telecommunication? Explain the steps in the formal letter writing process in detail.
b) Suppose you are V. Sharma. Write a cover letter to Mr. Gaurav Gupta, Manager HR of ABC Ltd., submitting your candidature for an opening in his organization, about which an advertisement was published in a newspaper. **10**

Q.7   Discuss the 'advantages and disadvantages of internet usage for the youth' in 200 words.
10

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — First Semester
FUNDAMENTALS OF COMPUTER PROGRAMMING (7.103)

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**. Each question carries equal marks.*

Q.1   a) What is logical error?
      b) What is a constant?
      c) Why do we use "main method" in a C# program?
      d) Write the syntax of do-while loop.
      e) What is concatenation of two strings?
      f) What is type conversion?
      g) What is a keyword? Give an example.
      h) What is arithmetic operator? Give an example.
      i) How to initialize a 1-D, 2-D array?
      j) Why to use try catch statements in C#?   **1½×10**

PART-A

Q.2   Write a pseudo code for finding largest number among 3 numbers. Also draw a flow chart for same.   **15**

Q.3   Describe toolbox window, server explorer window, property window, design window, source code window with examples.   **15**

Q.4   How many types of built-in functions exist in C#? Explain data types with an example of each type of data.   **15**

PART-B

Q.5   Write a program to find the factorial of a number.   **15**

Q.6   How do we create an array? Write a program to implement an array in C#.**15**

Q.7   Write short notes on the following:
      a) Error handling techniques.
      b) While and do while.   **7½×2**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
DATABASE ENGINEERING-I (7.104)

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**. Each question carries equal marks.*

Q.1   Answer the following:
   a) BCNF stands for _____.   **1**
   b) Define 'metadata'.   **2**
   c) In DDL, we modify the _____ of the table.   **1**
   d) Difference between data and information.   **2**
   e) The symbols used in ER diagrams are _____.   **5**
   f) Give two Codd's rules.   **4**

PART-A

Q.2   a) Explain the advantages and disadvantages of database system over file system.   **10**
   b) Explain the following terms:
      i) Data dictionary.
      ii) Two responsibilities of Database Administrator.
         5

Q.3   a) What do you mean by Data Independence?   **5**
   b) Explain the database architecture in detail.   **10**

Q.4   a) What is Normalization? What is the need of normalization?   **5**
   b) Explain the Second Normal Form (2NF) in detail with the help of an example.   **10**

PART-B

Q.5   a) Explain three DML (Data Manipulation Language) statements with proper syntax and examples.   **10**
   b) Explain the purpose of primary key with the help of an example.   **5**

Q.6   Write short notes on the following:
   a) View.
   b) Outer join.
   c) Referential Integrity Constraint.   **5×3**

Q.7   Give some applications of Business Intelligent Tools in the field of healthcare and education.   **15**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
DATABASE ENGINEERING-I (7.104)

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   Fill in the blanks:
a) Schema is defined as _____.   **2**
b) 2NF states that _____.   **2**
c) DDL stands for _____.   **1**
d) Three clauses used in SQL are _____ , _____ and _____. **3**
e) Three types of joins available in SQL are _____, _____ and _____. **2**

PART-A

Q.2   Explain the responsibilities of database administrator.   **10**

Q.3   Write short notes on the following:
a) Data models.
b) ER diagram.   **5×2**

Q.4   Explain the 3NF (Third Normal Form) in detail.   **10**

PART-B

Q.5   Explain two DDL (Data Definition Language) commands with proper syntax and examples.   **10**

Q.6   Write short notes on the following:
a) Constraints in SQL.
b) Keys in SQL.   **5×2**

Q.7   What are Business Intelligent Tools? Give some of their applications in various business sectors.   **10**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Second Semester
COMPUTER NETWORKS-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**. Each question carries equal marks.*

Q.1 **Fill in the blanks:**
  a) The _____ layer changes bit into electro-magnetic signals.
  b) _____ is the unreliable protocol.
  c) _____ layer lies between the network layer and the session layer.
  d) A cable break in _____ topology stops all transmissions.
  e) _____ are the rules that govern a communication exchange.   **2×5**

PART-A

Q.2 Discuss the various components of data communication and explain the advantages of a multipoint connection over a point to point connection.   **10**

Q.3 Explain the difference between service point address, logical address and physical address in the context of OSI reference model. Also, explain the responsibilities of session layer and physical layer.   **10**

Q.4 What is ATM? Explain its layered architecture and frame format in detail.   **10**

PART-B

Q.5 What do you understand by cryptography? Explain different types of cryptography by stating suitable examples.   **10**

Q.6 Write short notes on:
  a) TCP three way hand shake.
  b) Domain Name System.
   10

Q.7 What do you understand by UDP? Explain the characteristics of UDP with its frame format.   **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – First Semester
BUSINESS ENVIRONMENT (7.106)

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   Answer the following:
   a) Factors that create opportunities and threats to business units is known as _____ environment.
   b) Study of human population is called as _____.
   c) Indian is an example of _____ economy.
   d) _____ is main motive of business enterprise.
   2½x4

PART-A

Q.2   What is business? Explain characteristics and objectives of business.
   10

Q.3   What is environment scanning? Explain need and importance of environment scanning.
   10

Q.4   What is internal environment? Explain various components of internal environment.   **10**

PART-B

Q.5   What is external environment? Write short notes on any two components of external environment.
   10

Q.6   Compare and contrast various features of capitalist, socialist and mixed economy with their implications.
   10

Q.7   Write short notes on:
   a) Government Rules.
   b) GST Analysis.
   10

End Semester Examination, Dec. 2017

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**. Each question carries equal marks.*

Q.1   a) Define central tendency in statistics.
       b) What do you mean by independent events in probability?
       c) What do you mean by Domain of a function?
       d) If
$$A = \begin{bmatrix} 2 & 3 \\ 91 & -100 \end{bmatrix}$$
       Find $|A|$
       e) Define degree of a linear equation.
          2×5

PART-A

Q.2   If $U = \{1, 3, 5, 6, 8, 10, 13, 15, 20\}$

$A = \{1, 5, 8\}$, $B\{10, 15, 20\}$

$C = \{5, 8, 6, 20\}$

$D = \{13, 20, 8, 6\}$

Find the following:

a) $(C \cap D) \cup D$

b) $(A \cup B) - (B \cap A)$

c) $(A' \cup D') \cap (B' \cap C')$

d) $(B - A) \cup (C - D) \cap (A - C)$

e) $(A' \cap B') \cap (C' \cup D')$ **2×5**

Q.3   a) Find the Domain and Range of the given function.
          $y = 3x + 5$ **5**

       b) If $f, g : R \to R$ are defined respectively by:
          $f(x) = 3x^2 + 2x + 2$
          $g(x) = 3x + 2$

Find

i) fof^2

ii) fog **5**

Q.4 Find A^{-1} where

$$A = \begin{bmatrix} 1 & 2 & -1 \\ -1 & 1 & 2 \\ 2 & -1 & 1 \end{bmatrix}$$

10

PART-B

Q.5 a) Find standard deviation for the following data:

Class Interval	Frequency
0 – 10	5
10 – 20	15
20 – 30	25
30 – 40	35
40 – 50	45

7

b) Write formula of arithmetic mean for a grouped data. **3**

Q.6 A bag contains 7 red, 12 white and 4 green balls. What is the probability that
a) 3 balls drawn are all white.
b) 3 balls drawn are one of each colour. **5×2**

Q.7 a) Simplify:

$$\frac{3^5 \times 27^3 \times 9^4}{3 \times (81)^4}$$

5

b) Solve:

$$x^2 - 7x + 10$$

5

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
SYSTEM ANALYSIS AND DESIGN (7.201)

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) UML.
    b) Prototype.
    c) SRS.
    d) BlackBox testing.   **4×2**

PART-A

Q.2   Write short notes on the following:
    a) Technical feasibility.
    b) Testing.   **8**

Q.3   What do you understand by requirement gathering? What are the different methods of requirement gathering?   **8**

Q.4   What is SSAD? What are the advantages and disadvantages of SSAD?   **8**

PART-B

Q.5   Write short notes on the following:
    a) Structured chart.
    b) Control design.   **8**

Q.6   What is OOAD? How is it different from traditional system analysis and design?   **8**

Q.7   Write short notes on:
    a) User interface.
    b) User experience.   **4×2**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
SYSTEM 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**. *Each question carries equal marks.*

Q.1　**Fill in the blanks:**
　　　a) Software mistakes during coding is known as _____.
　　　b) For a function of an variables, robust-testing yields _____ test cases.
　　　c) Mutation testing is one form of _____ testing.
　　　d) Test suite is a _____.
　　　Answer the following questions:
　　　e) What is Beta test?
　　　f) What is validation?
　　　g) How many levels are there in CMM model? Name them.
　　　h) Describe any four attributes of software quality.　　　　**1×8**

PART-A

Q.2　What is testing? Explain software testing life cycle process, with the help of a suitable diagram.　　　　**8**

Q.3　Consider a program to find the roots of quadratic equation with three input integers
　　　[a, b, c] that ranges from [0, 100]. Design a set of boundary value analysis test cases with one of the following messages:
　　　a) Not a quadratic equation.
　　　b) Roots are real and equal.
　　　c) Roots are real and unequal.
　　　d) Roots are imaginary.　　　　**2×4**

Q.4　What is white Box Testing? Explain any one method of this testing with suitable testing example.　　　　**8**

PART-B

Q.5　What is software quality attributes? Explain McCall model of software quality.　　　　**8**

Q.6　Explain process metrics and product metrics? Explain ISO standards for software development process.　　　　**8**

Q.7 Explain the following terms:
   a) Quality Assurance.
   b) Test Execution.
   c) Test Environment.
   d) Test Team Organization.   **2×4**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
COMPUTER ALGORITHMS AND DISCRETE MATHEMATICS (7.203)

Time: 3 hrs.   Max Marks: **60**
                                                            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) ***Fill in the blanks:***
   i)   Data structures are classified as _____ and data structure.
   ii) A _____ data structure is an ordered list with insertion and deletion done at one end of the list known as top of stack.
   iii) _____ and _____ are nonlinear data structure.
   iv) Left, root, right traversal known as _____ traversal.   **1×4**
   b) ***Define the following:***
   i)   Tree date structure.
   ii) Stack.
   iii) Hamiltonian path.
   iv) Self loop in graph.   **2×4**

PART-A

Q.2 a) Explain the classification of data structure.
    b) Write a short note on quick sort with algorithm.   **6×2**

Q.3 a) Trace heap sort on the list:
     $L = \{11,\ 34,\ 67,\ 10,\ 5\}$.   **8**
    b) Let $A = \{2,\ 3,\ 4\}\ and\ B = \{a,\ b,\ c\}\ and\ f = \{(2,\ a),\ (3,\ b),\ (4,\ c)\}$. Find domain, co-domain and range of the function.   **4**

Q.4 a) Consider the function $f,\ g : R \to R$ defined by $f(x) = x^2 + 3x + 1,\ g(x) = 2x - 3$. Find the composition functions:
     i) fof.   ii) gof.   **8**
    b) Let $A = \{7,\ 8,\ 9\}\ and\ B = \{k,\ l,\ m,\ n\}\ and\ R$ is the relation from A to B:
     $R = \{(7,\ k),\ (8,\ k),\ (8,\ l),\ (8,\ m),\ (9,\ m),\ (9,\ n)\}$, find $R^{-1},\ \overline{R},\ DOM(R),\ RAN(R)$.   **4**

PART-B

Q.5 a) Create the binary tree using inorder and preorder traversal:

Inorder:	F	B	G	A	D	C	E	J
Preorder:	A	B	F	G	C	D	E	J

b)   What is spanning tree and when it is called a minimum spanning tree? Write Kruskal algorithm for minimum spanning tree.   **6×2**

Q.6   a) Define the following:
       i)   Forest.
       ii) Binary tree.
       iii) Degree of a vertex.   **3×2**
      b) A bag contains 8 blue and 4 red balls. Two balls are drawn at random with replacement. Find the probability of getting one blue and one red ball. **6**

Q.7   a) Solve the difference equation:
       $a_1 - 4a_{r-1} + 4a_{r-2} = 0$ and find the particular solution given that $a_0 = 1 \ and \ a_1 = 6$.
      b) Define cryptography with an example.   **6×2**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Third Semester
COMPUTER ALGORITHM AND DISCRETE MATHEMATICS (7.203)

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 question carries equal marks.*

Q.1   Answer the following:
    a) Give names of linear data structure.
    b) Define algorithm.
    c) Define stack.
    d) Define forest.
    e) Define tree.
    f) What is the difference between linear and binary search?
    g) What is the complexity of quick sort?
    h) If $A = \{2, 4, 6, 8, 10\}$; $B = \{1, 3, 5, 7, 9\}$ find $A \cup B$.   **1×8**

PART-A

Q.2   a) Differentiate between linear and non-linear data structure.   **4**
    b) What is an array? Which operation can be performed on array? Explain with example.   **4**

Q.3   What is stack? Explain push and pop algorithm, with example.   **8**

Q.4   Trace a heap sort on the list below:
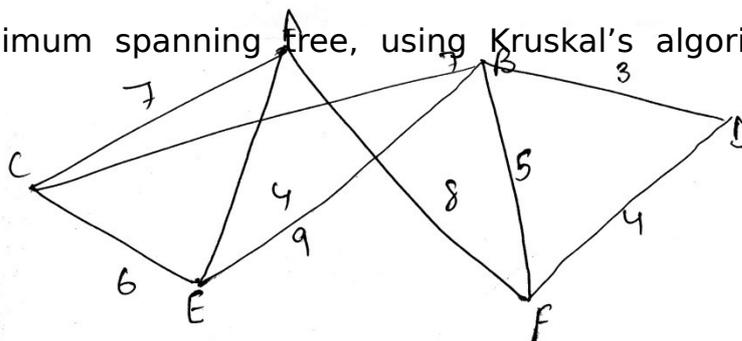10, 50, 20, 30, 25, 90.   **8**

PART-B

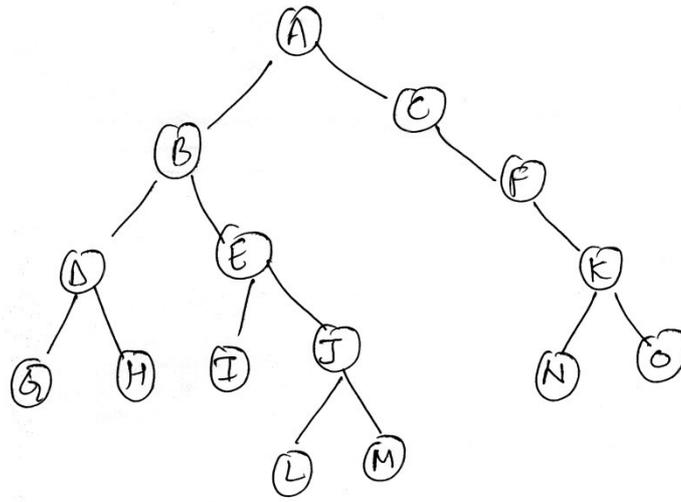Q.5   Create binary tree, using in order and preorder traversal.

In order :	D	B	H	E	A	I	F	J	C	G
Pre order :	A	B	D	E	H	C	F	I	J	G

    8

Q.6   Find minimum spanning tree, using Kruskal's algorithm of the following graph.

Q.7 a) Solve the difference equation $a_r - 4a_{r-1} + 4a_{r-2} = 0$ and find the particular solution given that $a_0 = 1$ and $a_1 = 6$.　　　　　　　**8**

b) For the tree shown below:
   i) Which node is the root?
   ii) Which nodes are leaves?
   iii) Name the parent of each node.

8

8

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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   Answer the following:
   a) Which of the following is not a member of class?
   i) Static function   ii) Member function
   iii) Friend function   iv) Virtual function
   b) Which symbol is used for destructor?
   i) ~   ii) #
   iii) –   iv) +
   c) Which of the following approach is adopted by C++?
   i) Top down   ii) Bottom up
   iii) Right left   iv) Left right
   d) A constrictor has the same _____ as that of class.
   i) Valuable   ii) Object
   iii) Function   iv) Name
   e) Two methods with the same name and same parameter.
   i) Abstraction   ii) Overloading
   iii) Multiplexing   iv) Duplexing   **2×5**

PART-A

Q.2   a) Is object oriented programming better than procedural oriented programming? Justify your answer.   **5**
       b) Create a class of employees to store their information:
       Data member:
                  Employee ID, employee name employee salary, employee experience.
       Member function   :   i)
                                                      To get the employee data.
                          ii) If the employee experience is greater than 5 years, a hike of Rs. 1000 will be given in salary.
                          iii) Display the employee data.   **5**

Q.3   How constructor is called in objected oriented programming? Write a program to show the use of parameterized constructor.   **10**

Q.4   a) What is static member function? Give an example.   **5**
       b) Write a program to show the concept of function overloading.   **5**

PART-B

Q.5   What is the relationship between base class and derived class? Write a program to show the concept of multiple inheritance.   **10**

Q.6 What is polymorphism? Write a program to show the concept of polymorphism. **10**

Q.7 How exception handling is implemented in C++? Write a suitable program to demonstrate the concept of exception handling. **10**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205) CBCS

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**. *Each question carries equal marks.*

Q.1 Answer the following:
a) Which of the following is not a type of constructor?
   i) Copy constructor   ii) Friend constructor
   iii) Default constructor   iv) Parameterized constructor
b) How many instances of an abstract class can be created:
   i) 1   ii) 0
   iii) 5   iv) 13
c) Destructor is a member function whose name is same as the class name but is preceded by a:
   i) tilde   ii) hash
   iii) dot   iv) dollar
d) What is the default modifier for the class member:
   i) Private   ii) Public
   iii) Internal   iv) Protected
e) _____ is the process by which object of one class acquires the properties of objects of another class:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulator
f) The wrapping of data and functions into a single unit is known as:
   i) Abstraction   ii) Inheritance
   iii) Polymorphism   iv) Encapsulation   **2½×6**

PART-A

Q.2 a) What are the basic features of object oriented approach? Explain with the help of suitable example. **10**
b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students. **5**

Q.3 a) What is function overloading? Explain it with the help of suitable program. **8**
b) Write a program in C++ to swap two number, using pass by value concept. **7**

Q.4 What is the foundation of object model? What are the elements of object model? Explain with the help of example. **15**

PART-B

Q.5 a) Write a program to show the concept of multilevel inheritance.   **8**
     b) What is the need of inheritance? Explain the various types of inheritance.
        7

Q.6 a) What is operator overloading? Write a program to show the unary
        operator overloading.   **8**
     b) What is polymorphism? Differentiate between compile time and run time
        polymorphism.   **7**

Q.7 a) What is exception handling? Write a program to handle the divide by zero
        error with exception handling.   **10**
     b) What is array out of bound exception? Explain.   **5**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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   Answer the following:
   a) Which of the following is not a type of constructor?
      i) Copy constructor   ii) Friend constructor
      iii) Default constructor   iv) Parameterized constructor   **1**
   b) How many instances of an abstract class can be created:
      i) 1   ii) 0
      iii) 5   iv) 13   **1**
   c) Destructor is a member function whose name is same as the class name but is preceded by a:
      i) tilde   ii) hash
      iii) dot   iv) dollar   **2**
   d) What is the default modifier for the class member:
      i) Private   ii) Public
      iii) Internal   iv) Protected   **2**
   e) _____ is the process by which object of one class acquires the properties of objects of another class:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulator   **2**
   f) The wrapping of data and functions into a single unit is known as:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulation   **2**

PART-A

Q.2   a) What are the basic features of object oriented approach? Explain with the help of suitable example.   **5**
      b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students.   **5**

Q.3   a) What is function overloading? Explain it with the help of suitable program.   **5**
      b) Write a program in C++ to swap two number, using pass by value concept.   **5**

Q.4   What is the foundation of object model? What are the elements of object model? Explain with the help of example.   **10**

PART-B

Q.5 a) Write a program to show the concept of multilevel inheritance. **5**
b) What is the need of inheritance? Explain the various types of inheritance. **5**

Q.6 a) What is operator overloading? Write a program to show the unary operator overloading. **5**
b) What is polymorphism? Differentiate between compile time and run time polymorphism. **5**

Q.7 a) What is exception handling? Write a program to handle the divide by zero error with exception handling. **5**
b) What is array out of bound exception? Explain. **5**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Third Semester
OBJECT ORIENTED PROGRAMMING (7.205)

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**. Each question carries equal marks.*

Q.1   Answer the following:
   a) Which of the following is not a type of constructor?
      i) Copy constructor   ii) Friend constructor
      iii) Default constructor   iv) Parameterized constructor
   b) How many instances of an abstract class can be created:
      i) 1   ii) 0
      iii) 5   iv) 13
   c) Destructor is a member function whose name is same as the class name but is preceded by a:
      i) tilde   ii) hash
      iii) dot   iv) dollar
   d) What is the default modifier for the class member:
      i) Private   ii) Public
      iii) Internal   iv) Protected
   e) _____ is the process by which object of one class acquires the properties of objects of another class:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulator
   f) The wrapping of data and functions into a single unit is known as:
      i) Abstraction   ii) Inheritance
      iii) Polymorphism   iv) Encapsulation   **2½×6**

PART-A

Q.2   a) What are the basic features of object oriented approach? Explain with the help of suitable example. **10**
   b) Create a class of student having data member: roll no, student name and address, member function: Get data and display data. Write a program to input and display the details of 5 students. **5**

Q.3   a) What is function overloading? Explain it with the help of suitable program. **8**
   b) Write a program in C++ to swap two number, using pass by value concept. **7**

Q.4   What is the foundation of object model? What are the elements of object model? Explain with the help of example. **15**

PART-B

Q.5   a) Write a program to show the concept of multilevel inheritance. **8**

b) What is the need of inheritance? Explain the various types of inheritance. **7**

Q.6 a) What is operator overloading? Write a program to show the unary operator overloading. **8**

b) What is polymorphism? Differentiate between compile time and run time polymorphism. **7**

Q.7 a) What is exception handling? Write a program to handle the divide by zero error with exception handling. **10**

b) What is array out of bound exception? Explain. **5**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Fourth Semester
DESKTOP APPLICATION DEVELOPMENT (7.206)

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***. Each question carries equal marks.*

Q.1   Explain the following:
      a) DML.
      b) SQL.
      c) IDE.   **3×5**

PART-A

Q.2   Explain Data Designs Tools used in VB .net for connecting to database.   **15**

Q.3   Design a registration form for a student database in VB .net, taking following user controls in system:
      a) User-'d
      b) User-name.
      c) User type.
      d) Dept.
      e) Course.
      The data entered by user in form should be stored in database using ADO .net connectivity and explain how the data would be stored in SQL server?**15**

Q.4   Make a calculator in VB.net showing has VCA calculation:
      a) Subtraction.
      b) Multiplication.
      c) Addition.
      d) Division.   **15**

PART-B

Q.5   What is dataset in data configuration wizard? How to import database in windows form? Explain in detail.   **15**

Q.6   How many different types of perfects used in VB.NET? Explain at least three projects in detail.   **15**

Q.7   How to add classes in your VB .Net project? Add a class in user registration form in VB. Net.   **15**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Fourth Semester
DESKTOP APPLICATION 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**. Each question carries equal marks.*

Q.1   Explain the following:
    a) Data grid.
    b) Data set.
    c) Fill ( ).
    d) Encapsulation.
    e) List box control.   **2×5**

PART-A

Q.2   What are the different advantages of VB .Net over traditional visual basic? Discuss the features in context to windows programing.   **10**

Q.3   How .Net platform is more industry friendly in comparison to other programing approaches? Explain with the help of a suitable real life example.   **10**

Q.4   What are the different database components in context to ADO .Net? Explain its all components in detail.   **10**

PART-B

Q.5   Differentiate between the following:
    a) Label and textbox.
    b) Check box and radio button.   **5×2**

Q.6   Explain all the features of object oriented programing in detail. How OOPS concept helps in building strong and secure programs?   **10**

Q.7   Explain the following:
    a) Data access layer.
    b) DDL, DML in SQL.   **5×2**

End Semester Examination, Dec. 2017

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**. Each question carries equal marks.*

Q.1 Write short notes on the following:
   a) Malware v/s viruses.
   b) Role of proxy server in information security.
   c) Firewall.
   d) Honey pots and Honey nets. **2×4**

PART-A

Q.2 How information security can be performed in an organization? Explain its functions of it in detail. **8**

Q.3 Explain the security SDLC in detail with the help of diagrams and examples.**8**

Q.4 What are the international laws for information security? **8**

PART-B

Q.5 How do you classify information security across an organization? What are ASSET risk? **8**

Q.6 a) Explain the digital forensic methodology in detail. **5**
   b) Differentiate between authorization and authentication with the help of an example. **3**

Q.7 Write short notes on:
   a) Bull's Eye model for information security.
   b) Information security policy, its standards and practices. **4×2**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) — Third Semester
DATABASE ENGINEERING-II (7.214)

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 Answer the following:
  a) Advantages of DBMS.
  b) Explain the various types of attributes.
  c) Create an E-R diagram of Library Management System.
  d) Discuss error handling and its advantages. **2×4**

PART-A

Q.2 Explain the following with example:
  a) Primary key.
  b) Intersection clause. **4×2**

Q.3 Differentiate between inner and outer joins in RDBMS. Why are these used? Discuss each join with suitable example. **8**

Q.4 What are the integrity rules? Explain with example. **8**

PART-B

Q.5 What is PL/SQL? Differentiate between SQL and PL/SQL. Also, discuss its architecture. **8**

Q.6 What do you mean by database security? Why it is important for an organization? Also, discuss data tampering. **8**

Q.7 How to code CLR stored procedure and function? Explain. **8**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) — Third Semester
DATABASE ENGINEERING-II (7.214)

Time: 3 hrs.   Max Marks: **60**
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 DML?
     b) What is primary key?
     c) What is database?
     d) What do you mean by PL/SQL?
     e) What is locking?
     f) What is trigger?   **2×6**

PART-A

Q.2 Design an ER-diagram for an airline reservation system.   **12**

Q.3 What is union, intersection, minus, group by and having clause in SQL? Explain each with an example. How they are different from joins?   **12**

Q.4 What are different types of attributes in RDBMS? What is cardinality? Explain both with suitable examples.   **12**

PART-B

Q.5 Differentiate between the following:
     a) Implicit and Explicit cursors.
     b) Local and Stored procedures.   **6×2**

Q.6 What is a control structure in PL/SQL? Explain it with examples.   **12**

Q.7 What is deadlock prevention? Explain two phase locking with an suitable example.   **12**

End Semester Examination, Dec. 2017
B.Sc. (Information Technology) – Second Semester
REQUIREMENT MODELING (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**. Each question carries equal marks.*

Q.1   Explain the following ***(any two):***
    a) Functional Requirement.
    b) Requirement Reuse.
    c) Requirement Process.   **4×2**

PART-A

Q.2   What do you mean by information system? Discuss its purpose and characteristics.   **8**

Q.3   Differentiate between:
    a) Management information system and decision support system.
    b) Computer based system and manmade system.   **4×2**

Q.4   Discuss the various methods of system design with example.   **8**

PART-B

Q.5   Under what circumstances iterative models is used? Discuss its merits and demerits.   **8**

Q.6   What do you mean by business strategy? Discuss the various scenarios to understand the real problem.   **8**

Q.7   What do you mean by dataflow diagram? Explain context level DFD with example.   **8**

End Semester Examination, Dec. 2017

B.Sc. (Information Technology) – Second Semester
REQUIREMENT MODELING (7.217)

Time: 3 hrs.   Max Marks: **60**

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 *(any two):*
a) Discuss iterative model with its merits and demerits.
b) Differentiate between use case diagram and sequence diagram.
c) Discuss the scope and objective of a business to control the business problem.   **6×2**

PART-A

Q.2   Do you think that analysis by a stakeholder is a must in the successful implementation of system? Justify this statement with example.   **12**

Q.3   What do you mean by requirement discovery? Explain all fact-finding techniques for requirement discovery.   **12**

Q.4   Explain the following with example:
a) Primary key.
b) Foreign key.
c) Composite key.
d) Super key.   **3×4**

PART-B

Q.5   "Communicating the right requirements leads to a successful system". Justify this statement with the help of example.   **12**

Q.6   Data analysis is becoming the need of industry now a days; explain the need of data analysis in education sector.   **12**

Q.7   Explain the following:
a) Requirement Reuse.
b) Requirement Completeness.   **6×2**

End Semester Examination, Dec. 2017

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**. Each question carries equal marks.*

Q.1 **a) Fill in the blanks:**
- i) A program in execution is called as _____.
- ii) Banker's algorithm is used for _____.
- iii) The time from submission to completion of a process is called _____.
- iv) Swapping needs _____ to store the swapped out programs. **1×4**

b) Answer the following:
- i) Define operation system.
- ii) Differentiate hard-real-time and soft-real-time operating systems.
- iii) Name two types of fragmentations and their solutions.
- iv) Define directory structure in brief. **1×4**

PART-A

Q.2 Consider the following set of process:

Process	Burst time	Priority
A	10	3
B	29	1
C	3	3
D	7	4
E	12	2

Calculate average turn-around time and average wait time for FCFS, SJF and priority algorithms. Also draw neat Gantt charts for the same. **8**

Q.3 'The layered approach of O.S. operating system acts as a resource manager', what resources does it manage? Discuss. **8**

Q.4 Define the characteristics of the operating systems given below:
- a) Batch operating system.
- b) Real time operating system. **4×2**

PART-B

Q.5 Consider the following system snapshot using data structure in the Banker's algorithm:

	Allocatio	Max	Availabl

	n								e	
	A	B	C	D	A	B	C	D	AB	CD
P₀	0	0	1	2	0	0	1	2	15	20
P₁	1	0	0	0	1	7	5	0		
P₂	1	3	5	4	2	3	5	6		
P₃	0	6	3	2	0	6	5	2		
P₄	0	0	1	4	0	6	5	6		

Answer the following questions:
a) What are the contents of Need matrix?
b) Find out the safe sequence for the system.   **4×2**

Q.6   Give memory management with the help of paging. How paging is implemented with the help of page table? Explain with an example.   **8**

Q.7   What is directory? Explain the concept of disk scheduling with the help of an example.   **8**

End Semester Examination, Dec. 2017

B. Sc. (Information Technology) – Fourth Semester
WEB APPLICATION DEVELOPMENT (7.303)

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:
a) HTML.
b) ASP .Net programming.   **5×2**

PART-A

Q.2   What are links in HTML? Differentiate external and internal links with suitable examples.   **10**

Q.3   Using suitable examples, write down any five manipulation commands in MySQL.   **10**

Q.4   Explain various validation controls in ASP .Net.   **10**

PART-B

Q.5   How website can be secured? Explain the process of authorization and authentication.   **10**

Q.6   Write a short notes on:
a) Grid view control.
b) Check box in ASP .Net.   **5×2**

Q.7   Explain how calendar is inserted in ASP .Net, using different attributes? **10**

End Semester Examination, Dec. 2017
B. Sc. (Information Technology) – Fourth Semester
WEB APPLICATION DEVELOPMENT (7.303)

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**. *Each question carries equal marks.*

Q.1   Write short notes on:
   a) Website security.
   b) Singular v/s paired tags.
   c) Ordered list.
   d) Grid view control.
   e) Hyperlinks in HTML.   **3×5**

PART-A

Q.2   What are the various server controls in ASP .net? How to use them?   **15**

Q.3   What do you mean by:
   a) Ajax Extension.
   b) Web Application.
   c) Site navigation.   **5×3**

Q.5   What is ASP .net? What are the components of .net framework?   **15**

PART-B

Q.5   a) Create a MRIU registration form in HTML.   **10**
       b) What is CSS? Explain internal CSS with example.   **5**

Q.6   a) Explain frame and frameset tag in HTML with the help of an example. **10**
       b) Explain list view control with an example.   **5**

Q.7   a) Differentiate ordered and unordered list.   **7**
       b) Explain three layer architecture of ASP .net.