COA201 Reg.No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019
B.C.A
DATABASE MANAGEMENT SYSTEM

Time: 3 Hrs Max. Marks: 80

PART – A

1. Answer any 10 questions from the following: 10x2=20

   a. Define database.

   b. Define tuple with example.

   c. What do you mean by degree of relationships? List the different types.

   d. Define data independence.

   e. Explain the GROUP BY clause.

   f. Define INF with example.

   g. Differentiate between DROP and DELETE command.

   h. List any two major functions of DBA.

   i. What is a database trigger?

   j. Define foreign key. What is its purpose?

   k. How do you add a new record into an existing relation?

   l. Define view. Write the syntax to create a view.

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. With a neat diagram, explain the various components of DBMS.

   b. Explain the different categories of data models. (6+4)

3. a. What is redundancy? What are the problems caused by redundancy? How redundancy is controlled in DBMS.

   b. List and explain the different categories of data base end-users. (6+4)

4. a. Explain any three characteristics of database approach.

   b. Explain the various types of attributes in ER-diagram with example. (6+4)

UNIT – II

5. a. Explain SELECT and PROJECT using relational algebraic operations. Explain with example.

   b. Explain the relational model constraints with example. **(6+4)**

6. a. Give a relational in Boyce-Codd Normal form and explain why the relation is in BCNF.

   b. Differentiate between equi-join and theta-join operation. **(6+4)**

7. a. Explain UNION, INTERSECTION and Cartesian product operations in relational algebra with an example.

   b. Write a note on third normal form of relation with example. **(6+4)**

UNIT – III

8. a. Create a table 'Item' using appropriate data types (Item_name, Item_no, qty, price, date_of_purchase)

   Write the following queries.

   i) Add the data to the table
   ii) Include a new column 'brand' for the same table
   iii) Display all the item details whose name starts with 'S'.
   iv) List all the items where date of purchase is before 12 Jan 2019 and 'qty' less than 20.

   b. Write a note on UPDATE command. **(6+4)**

9. a. Write a note on i) Primary Key ii) Super Key and explain with example.

   b. Write a note on parameterized cursors. **(6+4)**

10. a. Explain the block diagram of PL/SQL structure.

    b. Write a note on SQL data types. **(6+4)**

****

18COA202 Reg.No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

B.C.A

Advanced Programming in C and Data Structures

Time: 3 Hrs Max. Marks: 80

PART – A

1. Answer any 10 questions from the following: 10x2=20

a. Define Pointer.

b. Write the syntax of declaring 2-dimensional array.

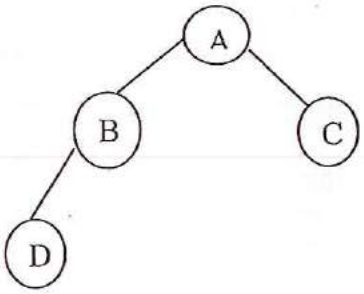
c. Evaluate the postfix expression $cab*+$ with values $a=5, b=2$ and $c=3$

d. Define singly linked list with neat diagram.

e. What do you mean by dynamic memory allocation?

f. Mention the difference between sequential search and binary search.

g.



What is the level of above tree?

h. What is the significance of EOF?

i. Give example for

i) Strictly Binary tree

ii) Complete Binary tree

j. Write any two applications of stack.

k. What are the two types of heap?

l. What do you mean by overflow in stack?

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. Write a 'C' program to read N numbers from the keyboard, store all even numbers into A file EVEN. Data and all odd numbers into ODD.Data.

b. Write a note on array of pointers. (6+4)

3. a. Define file. Explain any two file handling operations with example.

b. With example explain command line arguments. (5+5)

4. a. Explain the following memory allocation functions with example.
i) malloc ( ) ii) calloc ( )

b. With example explain the error handling function available in a file. (5+5)

UNIT – II

5. a. Convert the given expression into its postfix form.
   $A - E / C - F * R / Q * J$
   b. List the advantages of linked list. **(5+5)**

6. a. Write an algorithm to perform the following queue operations.
   i) Insert an element ii) Delete an element
   b. Explain the different types of linked list with diagram. **(6+4)**

7. a. Write an algorithm to delete a node from doubly linked list.
   b. Explain how stack can be represented as linked list. **(5+5)**

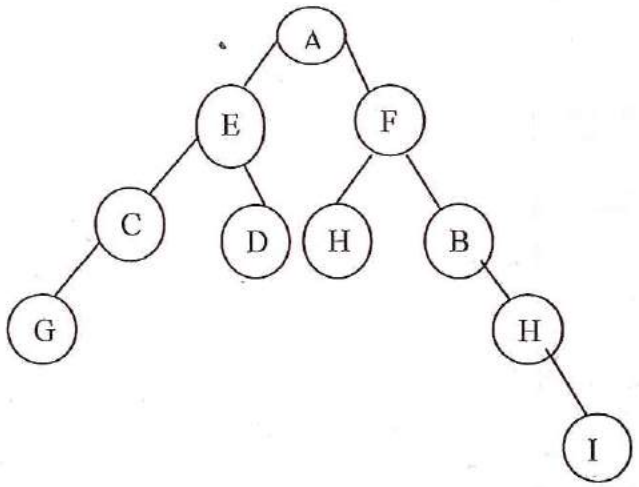
UNIT – III

8. a. Define Binary search tree. With example, explain how to insert a new element into binary search tree.
   b. Search a given element using binary search technique.
   Search Element : 17

4	5	1	8	99	3	14

(5+5)

9. a. Give the in-order, pre-order, post order traversal of a given Binary Tree.



   b. Sort the given array using selection sort technique.

55	73	65	11	-1	14

(6+4)

10. a. Construct a descending heap using the elements.
    60, 55, 30, 40, 50, 25, 65
    b. With example, explain the different ways of representing binary Tree.
    (6+4)

****

18MAT202 Reg. No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

MATHEMATICS

PAPER II: FUNDAMENTALS OF MATHEMATICS-2

Duration: 3 hours **Max Marks: 80**

Note: 1. Answer any SIX questions in Part A. Each question carries 2 marks.
2. Answer any FOUR full questions from Part B choosing ONE full question from each unit.

PART A

2x6=12

1. a) Represent the following using Venn diagram
i) A−B ii) $\sim(A \cup B)$

b) Define power set with an example.

c) If $A=\{4\}$ and $B=\{1,2,3\}$ what are $A \times B$ and $B \times A$.

d) Construct the truth table for $(P \vee Q) \vee \neg P$.

e) Given $A=\{1,2,6,7\}$ and $B=\{2,3,4,5,7\}$. Find A+B.

f) Define binary tree. Give example.

g) Write the truth table for conjunction and disjuntion.

h) Write in symbolic form "The crop will be distroyed if there is a flood".

PART - B

UNIT-I

2. a) If $A=\{1\}$ $B=\{a,b\}$ $C=\{2,3\}$ find $A \times B$, $B^2 \times A$, $A \times B \times C$, A^3 ? **(6)**

b) Let $A=\{1,2,3,4,5,6\}$ $B=\{2,4,6\}$ and $C=\{x \mid x$ is a positive integer $x^2<16\}$
Find i) $A \cup (B \cap C)$ ii) $(A \cup B) \cap (A \cup C)$ **(5)**

c) Let $X=\{1,2,3,4,5,6,7\}$ $R=\{<x,y> \mid x-y$ is divisible by $3\}$. Show that R is an equivalence relation and draw the graph of R. **(6)**

3. a) Let $R=\{<1,2>, <3,4>, <2,2>\}$ and $S=\{<4,2>, <2,5>, <3,1>, <1,3>\}$
Find $R \circ S$, $S \circ R$, $R \circ (S \circ R)$, $(R \circ S) \circ R$, $R \circ R$, *and* $S \circ S$. **(6)**

b) If $M_R=\begin{bmatrix}1&0&1\\1&1&0\\1&1&1\end{bmatrix}$ and $M_s=\begin{bmatrix}1&0&0&1&0\\1&0&1&0&1\\0&1&0&1&0\end{bmatrix}$ are two relation matrices find
$M_{R \circ S}$, $M_{\underset{R \circ S}{\sim\sim}}$ *and* $M_{\underset{S \circ R}{\sim\sim}}$ **(6)**

c) Let $X=\{1,2,3,4\}$ and $R=\{<x,y> \mid x>y\}$. Draw the graph R and also give the matrix. **(5)**

UNIT-II

4. a) Let $f: Z \times Z \to Z$ be defined by $f(x,y) = x * y = x + y - xy$. Show that the operation * is commutative and associative. Also find the identity element under *. **(5)**

b) Let $X = \{1,2,3\}$ and f, g, h and s be the functions from X into X given by
$f = \{<1,2>, <2,3>, <3,1>\}$ $g = \{<1,2>, <2,1>, <3,3>\}$
$h = \{<1,1>, <2,2>, <3,1>\}$ $s = \{<1,1>, <2,2>, <3,3>\}$. **(6)**
Find $f \circ g$, $g \circ f$, $f \circ h \circ g$, $s \circ g$, $g \circ s$ and $s \circ s$.

c) Define surjective, injective and bijective functions with one example each. **(6)**

5. a) Let $f(x) = x+2$, $g(x) = x-2$ and $h(x) = 3x$ for $x \in R$, R is the set of real numbers. Find $f \circ g$, $f \circ f$, $g \circ h$, *and* $(f \circ h) \circ g$. **(5)**

b) Define characteristic function of a set. State any three of its properties. Also show that $\sim \sim A = A$ **(6)**

c) Let *be a binary operation on a set X which is associative and has the identity element e. If an element $a \in X$ is invertible, then prove that both left and right inverses are equal. **(6)**

UNIT-III

6. a) Construct truth table for the following statements.
$\neg(P \vee (Q \wedge R)) \rightleftarrows ((P \vee Q) \wedge (P \vee R))$ **(5)**

b) Define the following statements. Also write the truth table.
i) Conjunction
ii) Disjunction
iii) Conditional **(6)**

c) Show the following equivalences.
i) $P \to (Q \to P) \Leftrightarrow \neg P \to (P \to Q)$
ii) $P \to (Q \vee R) \Leftrightarrow (P \to Q) \vee (P \to R)$ **(6)**

7. a) Prove that $((P \vee Q) \wedge \neg(\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$ is a tautology. **(6)**

b) Given the truth values of P and Q as T and those of R and S as F, find the truth values of the following. **(6)**
i) $P \vee (Q \wedge R)$
ii) $(\neg(P \wedge Q) \vee \neg R) \vee (((\neg P \wedge Q) \vee \neg R) \wedge S)$
iii) $(P \wedge (Q \wedge R)) \vee \neg((P \vee Q) \wedge (R \vee S))$

c) Prove the following
i) $(P \to Q) \Leftrightarrow (\neg Q \to \neg P)$
ii) $P \wedge (P \to Q) \Rightarrow Q$ **(5)**

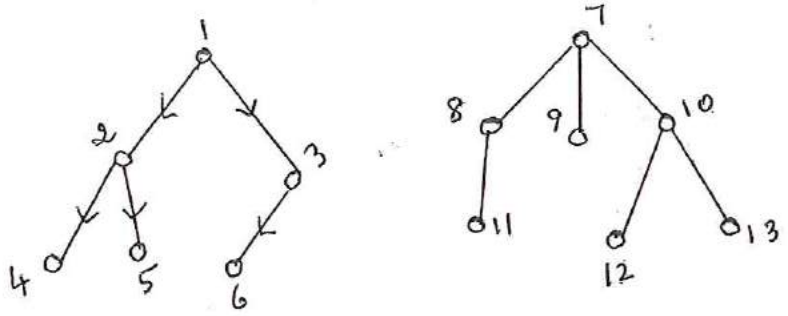
UNIT-IV

8. a) Define the following with one example each.

(i) Digraph (ii) Isomorphic graphs (iii) Cyclic graph **(6)**

b) In a simple $G = < V, E >$, prove that every node of digraph lies in exactly one strong component. **(5)**

c) Convert the following forest into binary tree. **(6)**

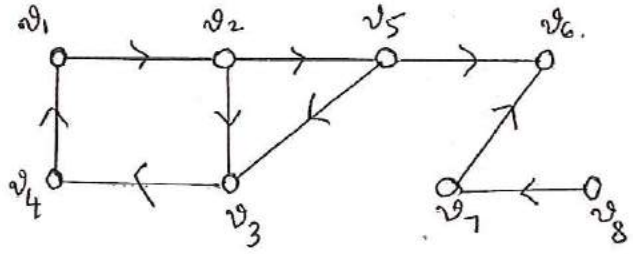


9. a) Define the following terms with an example.

i) Tree
ii) Elementary path
iii) Isolated node **(6)**

b) If $A = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 0 \end{bmatrix}$ is the adjacency matrix of a digraph $\overline{G}$, the converse of G, then represent G graphically. **(5)**

c) Determine whether the graph below is strongly, weakly or unilaterally connected. **(6)**



COA 401 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

B.C.A

JAVA PROGRAMMING

Time: 3 Hrs Max. Marks: 100

PART – A

1. **Answer any 11 questions from the following:** **11x2=22**
   a. What is Multithreading?
   b. Give the purpose of instance of operator.
   c. What is command line argument?
   d. Define local variables.
   e. What is an abstract class?
   f. What is a constructor?
   g. How is interface defined in Java?
   h. Define wrapper class.
   i. What is blocking a thread?
   j. What is a compile-time error?
   k. Name two built in exceptions in Java.
   l. What is a local applet?
   m. What is the purpose of repaint ( ) method?

PART – B

Answer any TWO questions from each unit:

UNIT – I

2. a. Write five differences between C++ and Java.
   b. What is JVM? Explain its role in making Java "Machine Neutral language".
   c. Explain data types in Java. **(5+4+4)**

3. a. Explain the general structure of Java.
   b. What are Tokens? Explain the different types of tokens supported by Java.
   c. Write a note on "while" loop with syntax and example. **(5+4+4)**

4. a. Write a note on assignment and conditional operator.
   b. Explain switch statement in Java with syntax and example.
   c. Write five features of Java. **(4+4+5)**

UNIT – II

5. a. Explain single inheritance with example.
   b. What is a package? How is package created in Java?
   c. Explain the steps involved in creating arrays. **(4+5+4)**

6. a. What do you mean by overloading methods? Explain with example.
   b. Explain the three types of visibility modifiers.
   c. What is inheritance? Explain different forms of inheritance. (4+4+5)

7. a. Write a note on abstract methods and classes.
   b. With an example, explain different types of constructors supported in Java.
   c. What is a package? Explain any three Java API packages. (5+4+4)

UNIT – III

8. a. Write a note on exception handling.
   b. Explain briefly the life cycle of an applet with a sketch.
   c. How can we pass parameter to a applet? Give example. (4+5+4)

9. a. Explain the life cycle of a thread.
   b. What is 'finally' block? When and how it is used? Give example. (6+7)

10. a. Explain any four thread methods.
    b. With an example, explain how to create a thread by using runnable interface.
    c. Briefly explain steps involved in developing and testing an applet. (4+4+5)

****

COA 402 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

B.C.A

VISUAL PROGRAMMING USING VB.NET

Time: 3 Hrs Max. Marks: 120

PART – A

1. Answer any 15 questions from the following: 15x2=30

   a. List any two .NET Languages.

   b. How does .NET provides the facility of automatic garbage collection?

   c. What is the purpose of import statement? Give an example.

   d. What is a constant? How do you declare it?

   e. Write any two data type conversion functions of VB.Net.

   f. What are enumerations? How do you create it?

   g. List the four different layout MDI methods.

   h. How do you hide the content of a text box?

   i. Define class. How do you define class in VB.net?

   j. What is an abstract class? Give the syntax to define an abstract class.

   k. Write any two differences between sub procedure and functions.

   l. Write any two methods of ListBox.

   m. What is grid view control?

   n. What do you mean by Complex binding? Write any one control which supports complex binding.

   o. What is exception? Which are the two types of exceptions?

   p. What is the purpose of finally black in pre-defined exception handling?

   q. List the four objects of a data provider.

   r. List any two properties of SqlConnection class.

PART – B

Answer any TWO full Questions from each unit:

UNIT – I

2. a. List and explain the two basic components of .NET platform.
   b. List and explain the different datatypes of VB.NET. How do you declare the variable in VB.NET?
   c. Write a program to find the sum of n numbers. (5+5+5)

3. a. Explain the following tools of the visual studio IDE. Toolbox, Solution Explorer Window, Properties Window, Design Window, Code Window.
   b. How do you select and execute one of the multiple statements based on the value of an expression?
   c. What is an array? How do you change the size of an existing array without altering the elements stored in it? Explain with the help of an example. (5+5+5)

4. a. Explain the different logical operators used in VB.NET.
   b. Differentiate between for loop and for each loop.
   c. Explain any five methods of string class in VB.NET. (5+5+5)

UNIT – II

5. a. Explain two properties for each of the following except name and text properties. Text Box, Label, Button, Radiobutton, Checkbox.
   b. How do you implement multiple inheritances in VB.NET? Explain with the help of an example.
   c. What is Multiple Document Interface Form? How does it differ from standard form? Explain the two important properties of it? (5+5+5)

6. a. Write a short note on keyboard event handling.
   b. What is Constructor? How do you define a constructor in VB.NET? Write any three properties of constructors
   c. What is parameter array? Explain its usage with the help of an example. (5+5+5)

7. a. Explain the complete syntax of MsgBox function. Give an example.
   b. Explain any two ways of achieving polymorphism.
   c. List and explain the different types of access modifiers. (5+5+5)

UNIT – III

8. a. Explain any five objects of ADO.net.
   b. What is data binding? Explain the different uses of it.
   c. How do you handle pre-defined exception handling? Explain. (5+5+5)

9. a. Explain the architecture of ADO.NET.
   b. Which are the different properties of SQLCommand class?
   c. How do you handle custom exception in VB.NET? Explain with the help of an example. (5+5+5)

10. a. Write a short note on data adapter.
    b. How do you navigate between the record using data sets?
    c. Explain the different advantages of ADO.NET. (5+5+5)

****

COA 403.1 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

B.C.A

SOFTWARE ENGINEERING

Time: 3 Hrs **Max. Marks: 120**

PART – A

1. **Answer any 15 questions from the following:** **15x2=30**
   a. Give IEEE definition of software engineering.
   b. Define reliability and portability.
   c. Define software process.
   d. Expand CCB and SCM
   e. Define error and failure
   f. What is PDL? Why it is used?
   g. Define corrective maintenance.
   h. Define run away project.
   i. Define static analysis.
   j. Define software metrics.
   k. What is acceptance testing?
   l. What do you mean by symbolic execution?
   m. Define coupling and cohesion
   n. What is stepwise refinement?
   o. What are test oracles?
   p. What is data dictionary?
   q. What do you mean by verification and validation?
   r. What do you mean by information hiding?

PART – B

Answer any TWO Questions from each unit:

UNIT – I

2. a. Explain the advantages and disadvantages of waterfall model.
   b. Explain the Software Engineering problem.
   c. Explain the Software Configuration item (SCI). **(6+5+6)**

3. a. Explain the spiral model with the help of a diagram.
   b. Write a note on capability maturity model.
   c. Define software metrics, measurement and models. **(6+6+3)**

4. a. Explain the components of software configuration management process.
   b. Explain iterative enhancement model with the help of a diagram.
   c. Explain any four quality attributes of software engineering. **(6+5+4)**

UNIT – II

5. a. What is SRS? Explain the different characteristics of SRS.
   b. Write a note on SDM strategy.
   c. Explain the different modules used in structure chart. **(5+5+5)**

6. a. Write a note on verification in the detailed design phase.
   b. Explain logic/ Algorithm Design.
   c. Write a note on: i) Consistency Checkers
      ii) Design Walkthroughs (5+4+6)

7. a. Explain any three programming style.
   b. Explain the different types of cohesion.
   c. Explain any four design constraints in an SRS. (6+5+4)

UNIT – III

8. a. Explain control flow based testing with suitable example.
   b. Write a short note on Test Oracles.
   c. What is testing? Explain Black Box and White Box testing. (6+3+6)

9. a. Explain Equivalence class portioning.
   b. Write a note on top-down and bottom-up approaches in coding.
   c. Write a note on test cases and test criteria. (4+5+6)

10. a. Explain the cause-effect graphing with the help of a diagram.
    b. Explain boundary value analysis.
    c. Explain the concept of structured programming. (6+4+5)

****

COA 404 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION, APRIL 2019

B.C.A

COMPUTER NETWORKS

Time: 3 Hrs Max. Marks: 120

PART – A

1. Answer any 15 questions from the following: 15x2=30

   a. Define computer network.
   b. What is half-duplex transmission?
   c. Expand: MHS and SMTP.
   d. Define Internet.
   e. What is frame relay?
   f. What is a packet?
   g. Define topology.
   h. What is back off time?
   i. What is the other name of 10 Base 5 Cabling?
   j. What is an active hub?
   k. Define data encapsulation.
   l. What is an IP address?
   m. What does a TCP sliding window do?
   n. In the address 182.54.233, which portion is the subnet?
   o. What is analog and digital signal?
   p. What is a terminator?
   q. What happens if a router cannot locate a destination address?
   r. Write any four WAN devices.

PART – B

Answer any TWO full Questions from each unit:

UNIT – I

2. a. Briefly explain the OSI reference model.
   b. How is the connection established with peer system in transport layer? (10+5)

3. a. What are the uses of computer networks? Explain.
   b. Explain flow control and windowing in transport layer. (7+8)

4. a. Explain LAN, WAN and MAN with neat diagrams.
   b. Write a note on the presentation layer. (9+6)

UNIT – II

5. a. Explain CSMA/CD.
   b. Explain Mesh, Ring and Hybrid topologies with its advantages. (6+9)

6. a. Explain coaxial cable and UTP cable with neat diagram.
   b. Explain the operation of Ethernet 802.3 and its broadcasting. (8+7)

7. a. Write a note on i) Hub ii) Bridge
   b. What is NIC? Define and describe the purpose of NIC.
   c. Write a note on Fibre-optic cable. (7+4+4)

UNIT – III

8. a. Explain TCP three-way handshake/open connections.
   b. What is RARP request and RARP replies? Explain. (8+7)

9. a. Explain TCP/IP transport with the TCP/IP segment format.
   b. Write a note on subnet Addressing. (8+7)

10. a. Assume IP host address 172.16.2.120. If the network is a class B network using 8-bit for sub netting, find the subnet mask, subnet address, host addresses and broadcast address.
   b. Explain why updated ARP tables are important? (10+5)

****

STA 402.1 Reg. No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019

STATISTICS-II

PROBABILITY

Time: 3 Hrs **Max. Marks: 80**

Note: Normal Distribution Tables will be provided on request.

PART - A

Answer any TEN of the following: **2X10=20**

1. a) Write down the sample space when three coins are tossed.

   b) Explain with an example 'Independent events'.

   c) Two dice are rolled once. What is the probability that sum is 9.

   d) If $P(A)=\frac{1}{2}$, $P(B)=\frac{3}{4}$ and $P(A\cup B)=\frac{7}{8}$, find $P(B|A)$.

   e) If $E(X)=5$ $E(X^2)=30$. Find $V(4X-3)$.

   f) Define 'Probability mass function'.

   g) A throws a fair die once. If the number obtained is an odd number, he gets Rs. 20/- otherwise he loses Rs. 10/- Find his expectation.

   h) Under what conditions, Binomial distribution tends to Poisson distribution.

   i) Give any two examples for a Poisson variable.

   j) Mean of Binomial distribution with 16 trials is 4. Find standard deviation.

   k) The parameter of Bernoulli distribution is 0.6. Find the mean and variance.

   l) For a Poisson distribution $P[X=0]=P[X=1]$. Find the variance.

PART – B

Answer any TWO of the following: **2x10=20**

2. a) A box contains 5 white and 4 black marbles. Two marbles are randomly drawn. What is the probability that they are (i) of some colour (ii) of different colours.

   b) A problem in Mathematics given to 2 students A and B. Their probability of solving it are $\frac{1}{6}$ and $\frac{2}{5}$ respectively. What is the probability that (i) problem is solved (ii) Nobody solves the problem. **(5+5)**

3. a) A purse contains 3 copper and 4 silver coins. Another purse contains 4 copper and 5 silver coins. If a coin is selected at random from one of the two purses, what is the probability that it is a copper coin?

   b) A card is drawn at random from a pack of playing cards.
   (i) What is the probability that it is a spade?
   (ii) If it is known that the card drawn is black, what is the probability that it is a spade? **(5+5)**

4. a) A can hit a target 4 times with 6 shots, B can hit 3 times with 4 shots and C can hit 2 times with 4 shots. If each of them shoot once at the target, what is the probability that
   (i) All of them hit (ii) At least one of them hits.

   b) What is the probability that, there will be 53 Sundays in a randomly selected
   (i) leap year (ii) non leap year **(5+5)**

Answer any TWO of the following: **2x10=20**

5. a) From the following data, find (i) K (ii) $E(-4X+3)$.

x	2	4	6	8	10
P(x)	$\frac{3}{8}$	$\frac{1}{4}$	K	$\frac{3}{16}$	$\frac{1}{16}$

b) A box has 3 red and 5 blue balls. Two balls are drawn at random from the bag. Find the expected number of red balls that can be drawn. **(5+5)**

6. a) In a lottery there are 10000 tickets costing Rs. 5/- each. There is one I Prize worth Rs. 2000/-, two II Prizes worth Rs. 500 each and ten III Prizes worth Rs. 200 each. Find the expected loss in buying a lottery ticket.

b) A person throws a fair die. If the number obtained in even, he gets Rs. 10/= otherwise he loses Rs. 4. Find his expected gain. **(5+5)**

7. Compute correlation coefficient between X and Y for the data given below. **(10)**

x \ y	0	1	2
-1	0	0.2	0.2
0	0.1	0	0
2	0.1	K	0.1
2	0.2	0	0

Answer any TWO of the following: **2x10=20**

8. The distribution of typing mistakes committed by a typist is given below. Assuming a Poisson distribution, find out the expected frequencies.

Mistakes per Page	0	1	2	3	4	5
No. of pages	142	156	59	27	5	1

(10)

9. a) Mention the properties of Normal distribution.

b) If 10 percent of the screws produced by a machine are defective. Find the probability that out of 20 screws selected at random, there are

i) exactly two defectives ii) atmost three defectives **(5+5)**

10. a) Marks scored by students in a certain examination follows Normal distribution with mean 60 and standard deviation 5. What is the probability that a randomly selected students scores (i) less than 70 marks (ii) more than 66 marks

b) Suppose that the shipping time follows an exponential distribution with average shipping time equal to 10 minutes. Find the probability that the loading time is

(i) less than or equal to 5 minutes (ii) between 5 and 12 minutes **(5+5)**

****

COA 605 Reg. No.....

CREDIT BASED SIXTH SEMESTER B.C.A. DEGREE EXAMINATION APRIL 2019
COMPUTER APPLICATIONS
COMPUTER GRAPHICS AND MULTIMEDIA

Duration: 3 Hrs. **Max. Marks: 100**

PART – A

1. Answer any ELEVEN questions from the following: **11×2=22**

a) Write the equations of a standard ellipse and a standard circle centered at origin.

b) What is a sliver?

c) Write the nested for loop statements to fill a rectangle.

d) Define bit map and pix map.

e) Write the inequalities to be satisfied for point clipping.

f) Write the matrix for scaling and rotation in homogeneous co – ordinate system.

g) What is rigid body transformation?

h) Define multimedia.

i) Differentiate synchronous and asynchronous transmission modes with reference to multimedia.

j) Define quantization.

k) Expand JPEG and MPEG.

l) Write the matrix for 3D scaling.

m) Define the term sampling rate.

PART – B

Answer any TWO full questions from each unit:

UNIT – I

2. a) Explain the architecture of Raster display system along with a neat diagram.

b) Derive and write midpoint algorithm for generating a straight line. **(6 + 7)**

3. a) Describe the conceptual framework for interactive graphics system with suitable diagram.

b) Derive the algorithm for generating an ellipse. **(6 + 7)**

4. a) Write DDA algorithm for generating a straight line.

b) Discuss the replicating pixel method of drawing the thick lines.

c) Write the midpoint algorithm for generating a circle. **(5 + 4 + 4)**

UNIT – II

5. a) Explain window to viewport transformation along with suitable diagrams.
   b) Prove that successive scalings are multiplicative.
   c) Explain transformation as a change in coordinate system. **(5 + 4 + 4)**

6. a) Derive the equations for rotating an object about origin by an angle θ.
   b) Explain Sutherland – Hodgman polygon clipping algorithm.
   c) Write a note on homogeneous co – ordinate system. **(5 + 5 + 3)**

7. a) Write 3D matrix for rotation about all 3 axes and 3D matrix for translation using homogeneous co – ordinate system.
   b) Write Cohen – Sutherland line clipping algorithm. **(7 + 6)**

UNIT – III

8. a) Discuss data stream characteristics for continuous media.
   b) Explain different types of MIDI messages.
   c) Write the steps of JPEG compression along with suitable diagram. **(4 + 4 + 5)**

9. a) Explain dynamics in graphics.
   b) Explain main properties of a multimedia system.
   c) Explain CD – ROM mode – 1with suitable block diagram. **(4 + 4 + 5)**

10. a) Explain basic technology of optical storage media with a suitable diagram.
    b) Explain image recognition steps with suitable diagram.
    c) Write a note on Dithering. **(5 + 5 + 3)**

****