COA 201 Reg.No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION, OCTOBER 2020

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 Schema.

b. What is Metadata?

c. List any two major functions of DBA.

d. Define data independence.

e. Define the term relation and degree of a relation.

f. When do you say that the relation is in normal form?

g. Give any two advantages of PL/SQL over SQL.

h. Mention any two properties of Primary Key.

i. How do you implement domain constraint in SQL?

j. What is a trigger?

k. How do you display the content of a relation without repletion?

l. What is a sub-Query? Give an example.

## PART – B

**Answer any TWO questions from each unit:**

### UNIT – I

**2.** a. Differentiate between the following attributes with example and symbolic nation.

i) Composite Vs Atomic ii) Single valued Vs Multivalued iii) Stored Vs Derived

b. List and explain any four DBMS languages. **(6+4)**

**3.** a. With a neat diagram, explain the three scheme architecture.

b. Explain the various symbols used in ER diagram. **(6+4)**

**4.** a. Explain the various characteristics and advantages of using database approach.

b. List and explain different categories of data models. **(6+4)**

## UNIT – II

5. a. List the different set operations in relational algebra. Explain any two with examples.
   b. Explain different types of keys with example. **(6+4)**

6. a. Explain equi-join and theta-join operations. Mention any two differences between them.
   b. What is second normal form? Explain with example. **(6+4)**

7. a. Discuss the insertion, deletion and modification anomalies. Why are they considered bad? Explain
   b. Write a note on the referential integrity constraints. **(6+4)**

## UNIT – III

8. a. Explain SELECT command with any two clauses.
   b. Compare and contrast UNIQUE and PRIMARY key constraint in SQL. **(4+6)**

9. a. Explain any five aggregate functions.
   b. How do you edit the contents of a table? Explain with the help of an example. **(5+5)**

10. a. Explain PL/SQL structure with example.
    b. Explain any four cursor attributes. **(6+4)**

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COA 202. 2 Reg.No. .....

CREDIT BASED SECOND SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2020

**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. Write two advantages of linked lists.

b. Write the importance of using a file.

c. What is a priority queue?

d. What is dynamic memory allocation?

e. What is a file?

f. What is the use of EOF?

g. What is a file descriptor?

h. What is FIFO and LIFO?

i. Define Circular linked List.

j. Write any two applications of binary tree.

k. Define the terms

i) degree of a tree ii) Leaf node.

l. What is a binary tree?

PART – B

**Answer any TWO questions from each unit:**

UNIT – I

2. a. Write a note on pointer expression.

b. Explain the file related functions with syntax and example
i) fopen ii) getw iii) fclose iv) fscanf v) fprintf. **(5+5)**

3. a. Explain the error handling during I/O operations of a file.

b. Write a program to find the length of a string without using strlen ( ) function. **(5+5)**

4. a. What do you mean by Command line arguments? Explain with an example.

b. Differentiate between
i) puts ( ) and fputs ( ) **(6+4)**

UNIT – II

5. a. What is a stack? Explain the different operations performed on stack.

b. Write an algorithm to convert a prefix expression to infix expression. **(5+5)**

6. a. Write an algorithm to delete an element from a queue.

b. Write an algorithm to delete an item from the circular linked list. **(5+5)**

7. a. Write an algorithm for solving matching of nested parenthesis.
   b. Explain the different categories of data structures. **(6+4)**

## UNIT – III

8. a. Explain Heap sort with an example.
   b. Define the following tree terminology.
   i) root ii) siblings iii) path iv) level **(6+4)**

9. a. Explain the linked representation of a binary tree. Give an example.
   b. Explain binary search algorithm. **(4+6)**

10. a. Explain merge sort with an example.
   b. Explain the quick sort method with an example.
**(5+5)**

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COA301.1 Reg. No.....

# CREDIT BASED THIRD SEMESTER B.C.A. DEGREE EXAMINATION SEPTEMBER 2020
## B.C.A.
## OBJECT ORIENTED PROGRAMMING CONCEPTS AND PROGRAMMING USING JAVA.

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

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## PART – A

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

a) Why Java is called a platform independent language?

b) What is the use of a Usecase diagram?

c) State any two differences between while and do while loops.

d) List any four data types used in java.

e) What are the different types of errors.

f) How do you instantiate a class? Give example.

g) Write the syntax of conditional operator.

h) How can multiple inheritance be achieved in java.

i) What are wrapper classes?

j) Define subclass and super class.

k) Which Method is used to set the priority for thread? Give example.

l) What is an abstract class?

m) What is the use of a PARAM tag?

## PART – B

**Answer any TWO questions from each unit:**

### UNIT – I

**2.** a) With syntax and example explain switch statement. **(5)**

b) Explain the reasons why object orientation works **(5)**

c) Write a note on scope of variables. **(3)**

**3.** a) Explain any 5 features of Java. **(5)**

b) What is JVM? Explain with the help of a neat diagram. **(4)**

c) Explain the interaction of Java with the world wide web **(4)**

**4.** a) Explain the concept of class hierarchy. **(5)**

b) With the help of an example explain the structure of Java Program. **(5)**

c) What is the use of continue statement in loops. **(4)**

## UNIT – II

5. a) What is method overloading? Give example. **(5)**
   b) Explain any four feature of constructors. **(4)**
   c) Write a note on visibility modifiers in Java programs. **(4)**

6. a) What is inheritance?
   Explain multilevel inheritance with the help of an example. **(5)**
   b) Write a note on Java API packages. **(5)**
   c) Define final class. Give the syntax.. **(3)**

7. a) What are Vectors? How do you declare vectors?
   Explain any four vector methods. **(6)**
   b) Define an array. How do you declare and define a two dimensional array. **(3)**
   c) List and explain any four string buffer methods with syntax and example. **(4)**

## UNIT – III

8. a) Explain the procedure of creating a thread by implementing the runnable interface. **(8)**
   b) State the differences between Multi threading and Multi tasking. . **(5)**

9. a) Explain the purpose of synchronization. **(4)**
   b) How do you catch multiple exceptions in Java. **(4)**
   c) Explain any three attributes of an Applet tag **(3)**

10. a) With a neat diagram explain the life cycle of an applet. **(8)**
    b) Write a note on thread exceptions. **(5)**

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COA304.1 Reg No : .....

# CREDIT BASED SEMESTER SYSTEM

## BCA. FOURTH SEMESTER DEGREE EXAMINATION, SEPTEMBER 2020

## CLOUD COMPUTING

**Duration: 3 Hours** **Max Marks: 120**

### Section A

**I. Answer any FIVE of the following questions:** **(5x4=20 Marks)**

1. Explain cloud computing.
2. Explain IaaSworkload.
3. Explain load balancing and virtualization.
4. Write a note on Network capacity.
5. Write any four application attributes required to be ported to the cloud.
6. Differentiate between managed and unmanaged cloud storage.

### Section B

**II. Answer any FIVE of the following questions:** **(5x8=40 Marks)**

7. Explain NIST model with a neat diagram.
8. Explain service level agreements.
9. Explain Porting Applications and simple cloud API.
10. Explain how to secure cloud and security boundary.
11. What is cloud storage? Write a note on block storage device and file storage device.
12. Write any eight features of cloud backup.

### Section C

**II. Answer any FIVE of the following questions:** **(5x12=60 Marks)**

13. Explain the various laws of cloudonomics.
14. Explain the cloud computing stack.
15. Explain with a neat diagram VMware's VSphare cloud computing infrastructure model.
16. Explain the lifecycle management of the cloud.
17. Explain with a neat diagram Service Oriented Architecture.
18. a)Explain SOMF Modeling. b) Write a note on SOA Security.

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COA 401 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2020

**B.C.A**

JAVA PROGRAMMING

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

PART – A

**1. Answer any 11 questions from the following:** **11x2=22**

a. List any two differences between Java and C++.

b. What is bytecode in Java?

c. When do we declare member of a class as static?

d. List any two properties of a constructor in java.

e. Mention any two API packages along with their purposes.

f. How do you extend one interface from the other? Give an example.

g. Give an example code which creates run time error.

h. What is a thread? Why threads are known as "Light weight processes"?

i. What is meant by thread priority? What is its default value?

j. What is an exception? Give an example.

k. What is synchronization?

l. Explain finalization in Java.

m. What is a remote applet?

PART – B

**Answer any TWO questions from each unit:**

UNIT – I

**2.** a. What is JDK? Describe any four tools available in JDK.

b. Give the general structure of a java program. Explain.

c. Explain the syntax of do ...while statement with example. **(5+4+4)**

**3.** a. Explain with example.

i) Conditional operator

ii) Increment and decrement operators

b. How do we perform jumps in loops? Explain

c. What are separators? Describe the various separators used in java.

**(5+4+4)**

**4.** a. Write a note on data types in Java.

b. Write a program in java to read a real value and an integer value through keyboard and find their sum and display it.

c. Write the syntax of switch statement. Give a code example. **(5+4+4)**

UNIT – II

**5.** a. Explain the syntax for the creation of class and objects. Give an example.

b. Explain overloading of method with an example.

c. What is inheritance? How does it help us to create a new class? Explain. **(5+4+4)**

6. a. Explain how a constructor method is used to initialize objects? Give suitable example.
   b. Write a program in Java to read a string and rewrite it in the alphabetical order for example, the word MOUSE should be printed as EMOSU.
   c. Explain any 4 vector methods. **(4+5+4)**

7. a. Explain how an interface can be used to implement multiple inheritances in Java. Give suitable example.
   b. Explain the following. i) Adding a class to a package ii) Hiding a class in a package
   c. Design a package that contains a class named 'Addition 'which adds two integers. Write a java program to include and use this package. **(5+4+4)**

## UNIT – III

8. a. Explain the thread life cycle with a state transition diagram.
   b. Explain any 3 commonly thrown exceptions.
   c. How are applets different from stand alone application programs? **(7+3+3)**

9. a. Explain the applet life cycle with a neat diagram.
   b. With a code example explain the creation of thread using runnable interface.
   c. List the most common run time errors in Java. **(6+4+3)**

10. a. Explain with a code example, how can we pass parameters to applets.
    b. Write an applet program to find sum of two numbers entered through keyboard. Also write the necessary HTML code to embed the applet.
    c. What is a finally block? When and how is it used? Explain.

**(5+5+3)**

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STA 402.1 Reg. No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2020

# 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) What is a random experiment? Give one example.

   b) Define dependent and independent events with one example each.

   c) Write down the sample space for tossing of three coins together.

   d) Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is multiple of 3 or 5?

   e) Define random variable and its probability function.

   f) State the properties of the distribution function of a random variable.

   g) If $E(y) = 4 \& E(y^2) = 25$ Find $S.D(y)$

   h) If p=0.25 for a Bernoulli distribution., find mean and variance.

   i) Give two examples of a Binomial distribution.

   j) Under what condition Poisson distribution tends to Normal distribution.

   k) Define a Normal distribution.

   l) If $x \sim P(2)$, find mean and S.D of Poisson distribution.

## PART – B

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

2. a) A bag contains 5 tennis balls & 4 cricket balls. Three balls are drawn randomly from the bag. Find the probability that
   i) All drawn balls are cricket balls.
   ii) Atleast one of the drawn balls is a cricket ball.

   b) A card is randomly drawn from a pack of playing cards. Find the probability that the card drawn is i) A spade or a king
   ii) A King or a queen **(5+5)**

3. a) A card is drawn at random from a pack of cards.
   i) What is the probability that it is a heart?
   ii) If it is known that the card drawn is red, what is the probability that it is a heart?

   b) If $P(A) = 0.6$, $P(B) = 0.2$ and $P(B \mid A) = 0.1$ find $P(A \cup B)$. **(5+5)**

4. a) A bag has 6 red and 2 black balls. Another bag has 9 red and 5 black balls. 2 balls are randomly drawn from the first bag and they are placed in the second bag. Then a ball is drawn at a random from the second bag. Find the probability that it is a black.

   b) 20 candidates take two examinations A&B. 8 of them passed in examination A, 7 passed in examination B & 10 failed in both the examinations. Find the probability that a randomly selected candidate.
   i) Passed in both the examinations
   ii) Failed in atleast one of the examination. **(5+5)**

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

**5.** a) Find the value of K in the following distribution and then find the variance.

| x | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| P(X) | k | 2k | 5k | 7k | k |

b) A boy is asked to throw a fair die once. He is assured of an amount (rupees) equal to the number occurring in the throw. Find his expectation. **(5+5)**

**6.** a) Following is a probability distribution of a random variable X.

| x | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| P(X) | 0.03 | 0.2 | 0.35 | 0.12 | 0.2 | 0.1 |

Find E(2+3X) and S.D(X)

b) A box contains 6 tickets. Two of the tickets carry a prize of ₹5 each, the other four tickets carry a prize of 1 each. If two tickets are drawn, what is the expected value of the prize. **(5+5)**

**7.** For the following bivariate probability distribution find k and hence obtain its correlation coefficient. **(10)**

| x \ y | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 0 | 0.02 | 0.03 | 0.03 | 0.08 |
| 1 | K | 0.08 | 0.03 | 0.02 |
| 2 | 0.3 | 0.2 | 0.1 | 0.03 |

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

**8.** a) In a grove there are 200 trees. Out of which 50 are mango trees. Among them, if 20 samples of 3 trees each are selected, how many samples will you expect.
i) Exactly one mango tree ii) more than one mango tree?

b) On an average, the number of defective items in a box is 4. If there are 100 such boxes, in how many of them would you expect?
i) One defective item ii) Altleast 2 defective items **(5+5)**

**9.** Fit a Poisson distribution to the following data and hence find the theoretical frequencies. **(10)**

| Mistakes per page | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| No. of pages | 132 | 58 | 34 | 12 | 9 | 3 | 2 | 0 |

**10.** a) The weights of 1000 students are Normally distributed with mean 55 Kgs and S.D 3 Kgs. Find the number of students with weight i) less than 58 Kgs. Ii) between 57 Kgs & 60 Kgs.

b) The time until next earthquake occurs in a particular region is assumed to be exponentially distributed with mean ½ per year. Find the probability that the next earthquake happens
(i) within 3 years (ii) after two and half year **(5+5)**

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COA 403.1 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2020

**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.

b. Expand LOC, SEPG.

c. List any four quality factors of software engineering.

d. What is Unit testing?

e. Define product metrics and process metrics.

f. What is project control list?

g. How to represent data source and sink in DFD?

h. What is data dictionary?

i. Mention the two approaches of prototyping.

j. What is decision table?

k. Mention different types of errors that occurs in an SRS.

l. What is mai and mao?

m. What is structured programming?

n. What is internal documentation?

o. What is abstraction? Why it is needed?

p. What are test oracles?

q. What do you mean by static analysis w.r.to coding?

r. What c-use and p-use represents in data flow based testing?

PART – B

**Answer any TWO Questions from each unit:**

UNIT – I

2. a. Explain the various problems faced in Software Engineering.
   b. Briefly explain prototyping model.
   c. Explain the limitations of waterfall model. (6+5+4)

3. a. Explain the different phases of development process.
   b. Explain the working of an iterative enhancement model.
   c. Briefly explain the phases of management process. (6+5+4)

4. a. Explain the spiral model with the help of a diagram.
   b. Explain the SCM life cycle of an item.
   c. Briefly explain the various characteristics of a software process. (6+3+6)

## UNIT – II

5. a. Explain the need of an SRS.
   b. Explain any Six characteristics of an SRS.
   c. Briefly explain the verification method of a detailed design. **(4+6+5)**

6. a. Explain the various components of an SRS.
   b. What is coupling? Explain the factors that affect coupling.
   c. Explain the activities of requirement process with a proper diagram. **(6+4+5)**

7. a. Explain the general structure of an SRS document.
   b. Explain PDL with a suitable example.
   c. Explain the different types of modules used in structure chart. **(5+5+5)**

## UNIT – III

8. a. Explain the concept of structured programming.
   b. Explain the various programming styles.
   c. Explain boundary value analysis. **(5+7+3)**

9. a. Explain data flow based testing with an example..
   b. Explain the cause-effect graphing with the help of a diagram.
   c. Write a note on top-down and bottom-up approaches in coding. **(5+5+5)**

10. a. Explain the test oracle with the help of a diagram.
    b. Explain control flow based testing with suitable example.
    c. Explain symbolic execution and execution tree. **(4+5+6)**

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COA 404 Reg.No. .....

CREDIT BASED FOURTH SEMESTER B.C.A. DEGREE EXAMINATION, OCTOBER 2020

B.C.A

COMPUTER NETWORKS

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

## PART – A

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

a. State the difference between connectionless and connection oriented communication.

b. What is windowing?

c. What are data packets?

d. List the protocols used in transport layer of TCP/IP reference model.

e. Define a protocol.

f. Differentiate incapsulation with decapsulation.

g. What are repeaters?

h. What do you mean by collision domain?

i. Differentiate hub and a switch.

j. Explain NIC.

k. What are the drawbacks of coaxial cable?

l. List two advantages of Bus topology.

m. What is the use of IP address having 32 one bits?

n. What is a subnet?

o. What is a default router?

p. Why are IP address written in dotted decimal notation?

q. Distinguish TCP and UDP.

r. What is subnet mask?

## PART – B

**Answer any TWO full Questions from each unit:**

### UNIT – I

**2.** a. With a neat diagram explain the LAN.

b. Explain the TCP/IP layer reference model. **(7+8)**

**3.** a. What are the uses of computer networking? Explain.

b. Explain the features of Novell Netware. **(7+8)**

4. a. Explain how a connection is established with a peer system.
   b. Explain the OSI reference model. (8+7)

## UNIT – II

5. a. Explain how the ring topology works. List its advantages and disadvantages.
   b. Explain the working of CSMA/CD. (7+8)

6. a. Explain star topology and extended star topology with the help of neat diagram.
   b. What is MAC address? Define and describe the purpose of MAC address. (8+7)

7. a. Explain the operations of Ethernet 802.3 and its broadcasting.
   b. Write a note on Frame Relay (8+7)

## UNIT – III

8. a. Explain how TCP establishes connection using 3 way hand shake.
   b. Explain ICMP. (8+7)

9. a. Explain the sliding window technique with example.
   b. Explain how RARP works. (8+7)

10. a. With a neat diagram explain the different classes of IP address.
    b. Explain subnet addressing concept with example. (7+8)

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COA 504.4 Reg. No. .....

CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION
OCTOBER 2020
B.C.A
DATA MINING

Time: 3 Hrs. Max. Marks: 120

PART – A

1. **Answer any FIFTEEN questions from the following:** 15×2=30
   a. Define Data Warehouse.
   b. What is the use of OLAP? Why OLAP tools are designed?
   c. Define support and confidence.
   d. What is knowledge discovery in database?
   e. What is dimension modeling?
   f. Define clustering.
   g. Define partition algorithm.
   h. What is perceptron learning rule?
   i. Define intrinsic and traverse link.
   j. What is sequence mining?
   k. What is an artificial neuron?
   l. What is a mutation?
   m. What is a traverse link?
   n. Define index node.
   o. Define page rank.
   p. What is the application of neural network?
   q. Define multimedia datamining.
   r. What is co citation?

PART – B

**Answer any TWO full questions from each unit:**

UNIT – I

2. a. What are the issues and challenges in DataMining?
   b. What is snowflake schema? Explain with a neat diagram.
   c. Explain various stages of KDD. (5+5+5)

3. a. Compare ROLAP and MOLAP.
   b. Explain the ROLLUP and ROLLDOWN operations.
   c. Explain star schema with a neat diagram. (5+5+5)

4. a. What is a DataCube? Explain with an example.
   b. Explain dimensional modeling with an example.
   c. Explain Supervised Learning. (5+5+5)

## UNIT – II

5. a. Compare categorical clustering with numerical clustering with an example.
   b. What are the advantages and disadvantages of decision tree? **(10+5)**

6. a. Write a note on splitting criteria.
   b. Explain Association rules with an example. **(5+10)**

7. a. Explain categorical clustering algorithms.
   b. Explain the apriori algorithm with an example. **(5+10)**

## UNIT – III

8. a. Explain structure of an Artificial neuron.
   b. What is RBFN? Explain it with a neat sketch.
   c. What is Web Structure mining? Explain. **(5+5+5)**

9. a. What are the applications of neural networks?
   b. Explain web usage mining.
   c. Explain crossover with a diagram. **(5+5+5)**

10. a. Write a note on support vector machines.
    b. What are Genetic Algorithms? Explain.
    c. Write a note on Rough set theory. **(5+5+5)**

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COA 505.6 Reg. No.....

**CREDIT BASED FIFTH SEMESTER B.C.A. DEGREE EXAMINATION OCTOBER 2020**
**B.C.A.**
**E - COMMERCE**

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

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## PART – A

**1. Answer any 10 questions from the following:** **10×2=20**

a) Write any two technical components of E – Commerce.

b) What is an EDI?

c) Give any two benefits of EDI.

d) What are the requirements to conduct E-commerce business?

e) List the categories of business models.

f) Define cryptography.

g) Write the applications of B2B market places ?

h) Write any four methods of preventing computer crimes.

i) What is a firewall?

j) Write any two goals of SCM.

k) What is denial of service?

l) What is sniffing?

## PART – B

**Answer any TWO questions from each unit:**

### UNIT – I

**2.** a) Explain the scope of E – Commerce.

b) Explain the functions of E- Commerce. **(6+4)**

**3.** a) Explain the activities of E- Commerce.

b) Explain the broad goals of E- Commerce. **(4+6)**

**4.** a) Write the applications of E – Commerce.

b) List the advantages and disadvantages of E – Commerce. **(4+6)**

## UNIT – II

5. a) Briefly explain B2B E – Commerce with a diagram.
   b) Explain Data Encryption Standard ( DES) **(6+4)**

6. a) Explain any six types of computer crimes.
   b) State the reasons for having firewalls. **(6+4)**

7. a) How does the digital signature work? Explain.
   b) Explain the major types of security problems. **(6+4)**

## UNIT – III

8. a) Explain the functions of SCM.
   b) Write a note on E – Cash. **(6+4)**

9. a) Write a note on spoofing.
   b) Explain the different categories of supply chain management. **(4+6)**

10. a) Explain issues and challenges involved in E – Banking.
    b) With a diagram, explain the transactions involved in credit card payment system. **(5+5)**

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COA605 Reg. No : .....

# CREDIT BASED SEMESTER SYSTEM
## B.C.A. SIXTH SEMESTER DEGREE EXAMINATION, SEPTEMBER 2020
## COMPUTER GRAPHICS AND MULTIMEDIA

**Duration: 3 Hours** **Max Marks: 80**

### Section A

**I. Answer any SEVEN of the following questions:** **(7x2=14 Marks)**

1. List the software components of conceptual framework of interactive graphics.
2. Write any two drawbacks of the DDA algorithm.
3. State any 2 characteristics of the Moving pen method.
4. Write the nested C statements for filling rectangles.
5. Write the 3D homogeneous coordinates matrix for translation and scaling.
6. Write a 3X3 homogeneous coordinate system matrix for translation after shifting the image down by 1/3 units and left by 1 unit.
7. What is meant by quantization? Give an example of a 3-bit quantization.
8. Expand a) JPEG b) MPEG

### Section B

**II. Answer any SIX of the following questions:** **(6x6=36 Marks)**

9. Write a note on the graphic standards.
10. Implement the concept of Bresenhem's midpoint circle drawing algorithm using C programming.
11. Write a menu driven program to fill a polygon using either flood fill or boundary fill algorithm.
12. Define reflection.Explain common reflections with suitable diagrams.
13. Write a program to rotate an object about the origin.
14. List and explain the main properties of multimedia system.
15. Explain the areas of CD-MO.

### Section C

**III. Answer any THREE of the following questions:** **(3x10=30 Marks)**

16. (a)Briefly explain the architecture of the Vector Display system. (b) Distinguish between Raster Scan Display and Vector Scan Display Systems.
17. (a)What is a polygon? List and explain the two types of polygon with an example each. (b)Explain the even-odd method of determing polygon inside points.
18. Explain and write the Cohen-Sutherland line clipping algorithm.
19. (a) Describe the types of MIDI messages.
    (b) Explain the commonly used components of a MIDI synthesizer.

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