**(DMCA201)**

**ASSIGNMENT - 1**

**M.C.A.DEGREE EXAMINATION, MAY– 2019**

**Second Year**

**SOFTWARE ENGINEERING**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Explain Spiral model with suitable example. Also explain how it differs from Software Prototyping model.

***Q2)*** a) Draw the Data Flow Diagram with different levels for withdraw and deposit of money in a bank.
b) What is software prototyping? Explain its significance in software engineering with example.

***Q3)*** What is importance of User Interface? Explain user Interface design rules with examples.

***Q4)*** Explain Black box testing and White box testing. Explain any one technique to carry out each testing.

***Q5)*** a) Describe the differences between project metrics and process metrics.
b) Describe four P's for Project Management.

***Q6)*** Explain incremental model for system development.

***Q7)*** Write about functional and Nonfunctional requirements.

***Q8)*** Describe Different Quality standards.

***Q9)*** Explain in detail the behavioral models of a software system.

**(DMCA201)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY– 2019**

**Second Year**

**SOFTWARE ENGINEERING**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Draw database design model.

***Q2)*** Describe the steps to find cyclomatic complexity using flow graph.

***Q3)*** Differentiate alpha testing and beta testing.

***Q4)*** Explain data dictionary in brief and where it is used.

***Q5)*** Define unit testing.

***Q6)*** What is software product?

***Q7)*** What is software quality?

***Q8)*** Define cohesion.

***Q9)*** What is meant by risk management?

**(DMCA202)**

**ASSIGNMENT - 1**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**PROGRAMMING WITH JAVA**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** How to create string object in Java? Discuss about various string handling functions in Java with syntax.

***Q2)*** What is constructor? Give the restrictions of constructors. Explain about different types of constructors.

***Q3)*** a) What is collection in Java? Differentiate between Vector and ArrayList.
b) Explain how to use try, catch and finally in exception handling.

***Q4)*** Explain polymorphism with its need. How to achieve polymorphism in Java?

***Q5)*** What is AWT? Discuss about AWT labels, buttons menus and menu bars.

***Q6)*** Write about JDK, JRE and Java virtual machines.

***Q7)*** Describe different data types used in Java.

***Q8)*** Write about public, private, protected and default access modifier with example.

***Q9)*** Write a program that creates and initializes a four integer element array. Calculate and display the average of its values.

**(DMCA202)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**PROGRAMMING WITH JAVA**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Explain garbage collection and finalize method in JAVA.

***Q2)*** Explain use of Interface with suitable example.

***Q3)*** Describe different states of applets during the execution.

***Q4)*** Differentiate Byte stream and Character stream.

***Q5)*** Define platform independence.

***Q6)*** Define package.

***Q7)*** What is method overriding?

***Q8)*** What is stream?

***Q9)*** Give any two built–in exceptions.

**(DMCA203)**

**ASSIGNMENT - 1**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**COMPUTER NETWORKING**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Explain about frequency division and wave division multiplexing with neat architectures.

***Q2)*** Explain various versions of CSMA protocols.

***Q3)*** Explain distance vector routing mechanism with example.

***Q4)*** What is internetworking? Discuss the different global addressing schemes and the issues in forwarding the IP.

***Q5)*** What is the need of Domain name service? Explain DNS architecture.

***Q6)*** Write about bus and ring type network topologies.

***Q7)*** Briefly explain about congestion control mechanism.

***Q8)*** What is the difference between guided and unguided transmission media?

***Q9)*** Briefly explain about wide area networks.

**(DMCA203)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**COMPUTER NETWORKING**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Write short notes on packet switching.

***Q2)*** Briefly explain about IPV4 protocol.

***Q3)*** Describe salient features of dynamic host configuration protocol.

***Q4)*** Explain about e-mail security.

***Q5)*** What is Ethernet?

***Q6)***Define hamming distance.

***Q7)***What is firewall?

***Q8)*** What is bridge?

***Q9)*** What is static and dynamic routing?

**(DMCA204)**

**ASSIGNMENT - 1**

**M.C.A. DEGREE EXAMINATION, MAY– 2019**

**Second Year**

**COMPUTER ALGORITHMS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** a) Explain the properties of an algorithm with an example.
b) Explain about Worst case, best case and Average Case Complexity.

***Q2)*** Discuss about quick sort algorithm with suitable example and derive its complexities.

***Q3)*** Solve the following job sequence problem.
n = 4, $(p_1, p_2, p_3, p_4) = (100, 10, 15, 27)$, $(d_1, d_2, d_3, d_4) = (2, 1, 2, 1)$. Find the optimal Sequence and profit.

***Q4)*** Explain Backtracking Method. What is N-Queens Problem? Give solution of 4-Queens Problem using backtracking Method.

***Q5)*** Explain how branch and bound technique differs from back tracking. Solve the Travelling Salesman problem using branch and bound algorithms.

***Q6)*** Briefly explain about amortized analysis of algorithm.

***Q7)*** What is Divide and Conquer Technique? Give the use of it for binary Searching method.

***Q8)*** State and explain about quick hull problem.

***Q9)*** Constrict Huffman code for the following data: p(A) = 0.1 = p (B), p(C) = 0.3, p(D) = 0.14, p(E) = 0.12 and p(F) = 0.24. Encode the text CAD and Decode 10011011011101.

**(DMCA204)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY– 2019**

**Second Year**

**COMPUTER ALGORITHMS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Explain Chained Matrix Multiplication with example.

***Q2)*** Solve the all pair shortest paths problem for the digraph with weight matrix.

$$\begin{bmatrix} 0 & \infty & 3 & \infty \\ 2 & 0 & \infty & \infty \\ \infty & 7 & 0 & 1 \\ 6 & \infty & \infty & 0 \end{bmatrix}$$

***Q3)*** Explain the Graph – coloring problem. And draw the state space tree for m=3 colors n=4 vertices graph.

***Q4)*** Solve the knapsack problem by branch and bound technique.

***Q5)*** Define Big (O) notation.

***Q6)*** What is spanning tree?

***Q7)*** What is meant by optimal binary search tree?

***Q8)*** Define backtracking.

***Q9)*** State subset sum problem.

**(DMCA205)**

**ASSIGNMENT - 1**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**DISTRIBUTED OPERATING SYSTEMS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Discuss different software and hardware concepts in distributed operating system.

***Q2)*** Explain about parameter passing and dynamic binding in remote procedure call.

***Q3)*** Explain about deadlock detection and prevention issues in distributed systems.

***Q4)*** Discuss about workstation and processor pool system models.

***Q5)*** Explain about distributed file system design issues.

***Q6)*** What are the advantages of distributed systems over independent PC's.

***Q7)*** Describe the functions of ATM adaption layer.

***Q8)*** What is group communication? Explain in brief.

***Q9)*** Explain about clock synchronization algorithm.

**(DMCA205)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**DISTRIBUTED OPERATING SYSTEMS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Write about token ring mutual exclusion algorithm.

***Q2)*** Explain about thread package.

***Q3)*** Explain about scheduling concept in distributed systems.

***Q4)*** Write short notes on caching and replication mechanism in distributed file system.

***Q5)*** What is true distributed system?

***Q6)*** What is switched multiprocessor?

***Q7)*** What is physical clock?

***Q8)*** Define mutual exclusion.

***Q9)*** What is meant by atomic transaction?

**(DMCA206)**

**ASSIGNMENT - 1**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**COMPUTER GRAPHICS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Draw the architecture and explain working of raster scan display system.

***Q2)*** Using midpoint Ellipse generation algorithm, generate points on the ellipse with center as origin, major axis is 8 units and minor axis is 6 units.

***Q3)*** A triangle is defined by P (2, 2), Q (4, 2) and R(5, 5). Find the transformed coordinates after $90^{o}$ clockwise rotation followed by reflection about line y = -x.

***Q4)*** Explain about parallel and perspective projections and derive its matrices.

***Q5)*** What is depth buffer method? Write and explain the steps of a depth buffer algorithm.

***Q6)*** What is DVST? List merit and demerit of DVST.

***Q7)*** Explain scan line polygon filling algorithm with example.

***Q8)*** Explain about line clipping and polygon clipping.

***Q9)*** Derive transformation matrix for 2D rotation.

**(DMCA206)**

**ASSIGNMENT - 2**

**M.C.A. DEGREE EXAMINATION, MAY – 2019**

**Second Year**

**COMPUTER GRAPHICS**

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** What is scaling transformation? Prove that two scaling transformation commute that is $S_1 . S_2 = S_2 . S_1$.

***Q2)*** Explain reflection with respect to any plane in 3D transformations.

***Q3)*** Explain the Bazier's curves and surfaces.

***Q4)*** Briefly explain Z-buffer visible surface determination algorithm.

***Q5)*** Define scan conversion.

***Q6)*** Define aspect ratio.

***Q7)*** Define windowing.

***Q8)*** What is meant by hidden surface?

***Q9)*** Define quadratic surfaces.

**(DMCA207)**

**ASSIGNMENT - 1**

# M.C.A. DEGREE EXAMINATION, MAY - 2019

## (Second Year)

## E-COMMERCE

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Discuss Early Business Information Interchange efforts.

***Q2)*** List and briefly define Identifying Web Presence Goals.

***Q3)*** Explain briefly regarding Digital Token-Base e-Payment System.

***Q4)*** Explain briefly regarding Customer Relationship Management.

***Q5)*** Explain the Importance of Data Warehouse for an Organization.

***Q6)*** Discuss advantages and disadvantages of E-commerce.

***Q7)*** Explain Network Routers and Switches.

***Q8)*** Discuss about Online Marketing.

***Q9)*** Explain the need of E-advertising.

**(DMCA207)**

**ASSIGNMENT - 2**

# M.C.A. DEGREE EXAMINATION, MAY - 2019

## (Second Year)

## E-COMMERCE

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Explain converting between different bit lengths.

***Q2)*** Give some reasons for using e cash.

***Q3)*** Explain Seven way to Reduce Inventory.

***Q4)*** Explain briefly regarding Data Mining.

***Q5)*** What is the importance of Search Engine?

***Q6)*** What Markup Languages and the Web?

***Q7)*** What is branding?

***Q8)*** Define Privacy.

***Q9)*** Give some examples of Encryption Technique.

**(DMCA208)**

## ASSIGNMENT - 1

## M.C.A. DEGREE EXAMINATION, MAY - 2019

### Second Year

### PROBABILITY & STATISTICS

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** a) From vessel containing 3 white and 5 black balls, 4 balls are transferred into an empty vessel. From this vessel a ball is drawn and is found to be white. What is the probability that out of four balls transferred 3 are white and 1 is black?

b) Prove that $P(A \cup B|C) = P(A|C) + P(B|C) - P(A \cap B|C)$ for any three events A, B and C.

***Q2)*** A random variable has the c.d.f : $F(x) = \begin{cases} 0 & : x < 0 \\ 1 - e^{-x/500} & : x \geq 0 \end{cases}$,

Find the i) $P(100 \leq X \leq 200)$ and $P(X \geq 300)$

***Q3)*** X is normally distributed and the mean of X is 12 and standard deviation is 4. Find out the probability of the following

a) $X \geq 20$.

b) $X \leq 20$.

c) $0 \leq X \leq 12$.

d) Find $x^1$, when $P(X \geq x) = 0.24$.

***Q4)*** Fit a curve of the form $y = ae^{bx}$ from the following data:

| $x$: | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $y$: | 1.6 | 4.5 | 13.8 | 40.2 | 125 | 300 |

***Q5)*** Find the value of Chi-square for the following data :

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Observed frequency : | 10 | 4 | 15 | 18 | 20 | 15 | 5 | 2 | 3 |
| Expected frequency : | 10 | 7 | 10 | 15 | 25 | 10 | 5 | 5 | 5 |

***Q6)*** If A and B are two mutually exclusive events, show that $P(A|\bar{B}) = \frac{P(A)}{[1 - P(B)]}$.

***Q7)*** Define marginal and conditional probabilities of a bivariate probability distribution.

***Q8)*** X and Y are independent random variables with variance 2 and 3. Find the variance of $3X + 4Y$.

***Q9)*** A continuous random variable X has *a.d.f.* $f(x) = 3x^2, 0 \leq x \leq 1$. Find '$a$' such that $p(X \leq a) = p(X > a)$.

**(DMCA208)**

## ASSIGNMENT - 2

## M.C.A. DEGREE EXAMINATION, MAY - 2019

### Second Year

### PROBABILITY & STATISTICS

**Maximum : 30 MARKS**

**Answer ALL questions.**

***Q1)*** Describe the F-test for testing equality of variances.

***Q2)*** Obtain the correlation co-efficient to the following data :

| | | | | | |
|---|---|---|---|---|---|
| $x$ | 10 | 14 | 18 | 26 | 30 |
| $y$ | 18 | 12 | 24 | 30 | 36 |

***Q3)*** Explain the method of least squares. Fit a straight line $y = a + bx$ to the data given below by the method of least segment.

| | | | | | |
|---|---|---|---|---|---|
| X : | 5 | 10 | 15 | 20 | 25 |
| Y : | 16 | 19 | 23 | 26 | 30 |

***Q4)*** Write short notes on statistical quality improvement programs.

***Q5)*** State the Bayesian Rule.

***Q6)*** Define continuous random variable.

***Q7)*** Define statistical hypothesis.

***Q8)*** Define correlation co-efficient.

***Q9)*** What is normal distribution?