ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second year

SOFTWARE ENGINEERING
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Explain iterative waterfall model for software life cycle and compare Incremental and Waterfall Process Model.

2. What is meant by architectural design? How to map Data Flow into Software Architecture?

3. Write about testing strategies for conventional software.

4. Explain various metrics for software process and software product domains.

5. Narrate the importance of software specification of requirements. Explain a typical SRS structure and its parts.

6. What are the process patterns and process assessment? Explain.

7. Write about negotiating and validating requirements.

8. Write about requirement elicitation and analysis process.

9. What is cohesion? Write about different types of Cohesion?

(DMCA201)
ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second year

SOFTWARE ENGINEERING
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Write short notes on class based components.

2. What are different level of testing and the goals of the different levels?

3. What is meant by Unit testing? How unit testing strategy works on a software module?

4. Describe the golden rules for interface design.

5. Define black box testing.

6. Define SRS document.

7. Define software prototyping.

8. What do you mean by horizontal and vertical partitioning?

9. Define design patterns.

(DMCA202)

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

PROGRAMMING WITH JAVA

MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Explain the following features of java:

    (a) Multithreaded

    (b) Architecture-neutral

    (c) Interpreted

    (d) Object oriented and

    (e) Portable

2. Differentiate method overloading with method overriding with examples.

3. What axe the various types of exceptions available in Java? Also discuss on how they are handled?

4. Discuss about different collection interfaces and its methods.

5. Discuss about different AWT controls with suitable example.

6. Write about data abstraction and polymorphism with suitable example.

7. What is the purpose of static and final keywords? Give proper example.

8. How interfaces are useful in Java? Explain with example.

9. How to create objects? Does Java support object destruction? Justify your answer.

(DMCA202)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

PROGRAMMING WITH JAVA
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Explain thread life cycle and thread creation in Java.

2. Differentiate between array and vector with examples.

3. Write about Float and Byte wrapper classes with syntax.

4. Assume that you have a Simple Applet that displays a message "Hello World". Write a HTML text file to execute that applet in web browser.

5. Define constructor.

6. Define applet.

7. Define polymorphism.

8. What is JVM?

9. What is garbage collection?

(DMCA 203)

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER NETWORKING
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. (a) What is network hardware? Explain in detail with respect to transmission technology and scale of networks.

    (b) With neat sketch discuss the functionalities of each layer in TCP/IP protocol suite.

2. Explain how wavelength division multiplexing works. What are its advantages over other methods?

3. (a) Describe the functions of Media Access Control sub layer.

    (b) Compare and contrast Local Area Networks and Wide Area Network technology.

4. Explain about centralized and distributed access techniques.

5. (a) Explain shortest path routing with suitable example.

    (b) Describe various threats in the network.

6. Calculate the polynomial checksum for the following frame and generator Frame: 1101011011 and Generator: $x^4 + x + 1$

7. Compare and contrast a circuit-switched network and a packet-switched network.

8. What is sliding window? How it is used in noisy channels for error control.

9. How to determine the type of the frame in HDLC protocol?

(DMCA 203)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER NETWORKING
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Write about time division switching and space division switching.

2. What are the addressing mechanisms followed in IEEE802. 11?

3. What is the role of routing table in datagram networks?

4. Write short notes on IP addressing scheme.

5. Define Parity Check.

6. Define de – multiplexing.

7. What is the need of Framing?

8. What is Ethernet?

9. Define DNS.

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER ALGORITHMS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. How to solve recurrence relations by recursion tree method? Give an example. b) What is pseudo-code? Explain with an example.

2. Show the result of running Merge sorting technique on the sequence: 45, 32, 53, 12, 19, 92, 16. Derive Best, Worst and Average time complexities of Merge sorting technique.

3. State the Greedy Knapsack? Find an optimal solution to the Knapsack instance n=3, m=20, (P_1, P_2, P_3)= (25,24,15) and (W_1, W_2, W_3) = (18,15,10)

4. Describe the Matrix multiplication chains problem. Apply the recursive solution of dynamic programming to determine optimal sequence of pair wise matrix multiplications.

5. (a) State the concept of branch and bound method and also list its applications.

    (b) Discuss the 4—queen's problem. Draw the portion of the state space tree for n = 4 queens using backtracking algorithm.

6. Describe the properties of an algorithm with an example.

7. What are the various disjoint set operations with example?

8. Explain how divide and conquer method help multiplying two large integers.

9. Explain common characteristics of dynamic programming.

(DMCA204)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER ALGORITHMS

MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. What is the time complexity of the Job sequencing with deadlines using greedy algorithm?

2. Solve the all-pair shortest path problems for given adjacent matrix graph using Floyd's Algorithm.

$$
\begin{matrix}
0 & 4 & 8 & \infty \\
\infty & 0 & 5 & 12 \\
\infty & \infty & 0 & 7 \\
5 & \infty & \infty & 0
\end{matrix}
$$

3. Draw all possible binary search trees for the identifier set (do, if, stop).

4. Using backtracking technique solve the following instance for the subset problem s= (1,3,4,5) and d=11

5. Define Big (O) notation.

6. State quick hull problem.

7. Define Spanning tree.

8. What is Huffman tree?

9. Define Back tracking.

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

DISTRIBUTED OPERATING SYSTEMS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Explain about hardware and software concepts of distributed operating systems in detail.

2. (a) Explain Bully election algorithms with example.

   (b) Discuss about deadlock prevention in distributed OS.

3. Discuss about the trends in distributed operating file systems.

4. Explain different layers of Asynchronous transfer mode networks with neat diagram.

5. (a) Describe the processor pool model.

   (b) Explain Bidding algorithm with example

6. What are the advantages and disadvantages of distributed OS?

7. Define scalability and reliability in distributed OS.

8. Explain the use of directory service.

9. What is meant by processor allocation? Explain.

(DMCA205)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

DISTRIBUTED OPERATING SYSTEMS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1.   What is blast protocol in RPC?

2.   Differentiate between stateless and stateful servers.

3.   Define mutual exclusion in distributed OS.

4.   Discuss the causes of thrashing in a distributed shared memory system.

5.   Function of ATM adapter layer.

6.   Features of good distributed file system.

7.   Physical and logical clocks.

8.   Pooling and interrupt in message passing.

9.   Load balancing approach.

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER GRAPHICS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Digitize a line from (10,12) to (15,15) on a raster screen using Bresenhams straight line Algorithm what are the various line drawing algorithms.

2. Explain in detail the Sutherland-Hodgeman clipping algorithm with an example.

3. With suitable examples explain all 3D transformations.

4. Explain in detail about Bezier curve and spline.

5. (a)   Explain BSP-Tree Method

    (b)   Describe Area-Subdivision Method.

6. Explain Ellipse generating Algorithm?

7. What is a filled area primitive?

8. Explain General Pivot point rotation

9. Write about Nicholl–Lee–Nicholl Line clipping algorithm

(DMCA206)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

COMPUTER GRAPHICS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1.   Differentiate parallel and perspective projections

2.   What are the various visible face detection methods?

3.   Write short notes on polygon surfaces.

4.   Write short notes on Painter's algorithm.

5.   Define refresh buffer/frame buffer.

6.   Define Reflection.

7.   What is shear transformation?

8.   What is cubic spline?

9.   What is Scan-line coherence?

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

E-COMMERCE

MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. (a) Explain the history of e-commerce.

   (b) Discuss about various business models of e-commerce.

2. What is EDI? How EDI works? Discuss about EDI applications in business.

3. What is Supply Chain Management? Why is it important in e-business environment?

4. What is e-payment? Discuss the functions of e-payment system? Why is orientation and standardization required for e-payment business?

5. Discuss the security requirement of Internet and e-commerce applications and these requirements are fulfilled by various hardware and software systems.

6. Discuss how e-commerce is helpful to business success.

7. How do we achieve workflow automation in e-business environment?

8. What are the risks involved in e-payment systems?

9. What do you understand by Electronic Fund Transfer?

(DMCA207)

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

E-COMMERCE

MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1.   What do you understand by WWW? What is the use of hypertext links in Internet access?

2.   Define Cyber cash and its role in e-commerce.

3.   Explain the significance of Internet server in e-commerce business.

4.   What do you mean by digital currencies? Explain.

5.   Smart cards

6.   e-strategy

7.   e-governance

8.   Intelligent web designs

9.   e-marketing.

ASSIGNMENT - 1

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

PROBABILITY AND STATISTICS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. (a) Find the probability that a committee of 10 people chosen from a group consisting of 40 principals, 35 teachers, and 25 students, will include three principals, five teachers, and two students.

   (b) The contents of urns I, II and III are as follows:

   1 white, 2 black and 3 red balls,

   2 white, 1 black, and 1 red balls, and

   4 white, 5 black and 3 red balls.

   One urn is chosen at random and two balls drawn. They happen to be white and red. What is the probability that they come from urns I, II or III?

2. (a) If X is Poisson variate such that $P(X=2) = 9P\,(X=4) + 90\,P(X=6)$ find

   (i) λ, the mean of X

   (ii) β the coefficient of skewness

   (b) X is normal variate with mean 30 and S. D. is 5. Find the probabilities that

   (i) $P(26 \leq X \leq 40)$

   (ii) $P(X \geq 45)$

   (iii) $|X-30| > 5$.

3. Calculate the correlation coefficient r for the following data:

X	63	50	55	65	55	70
Y	87	74	76	90	85	87
X	64	70	58	68	52	60
Y	93	98	91	77	79	88

4. (a) 10 observations on price x and supply y the following data was obtained.

   $\Sigma x = 130$, $\Sigma y = 220$, $\Sigma x2 = 2288$, $\Sigma y2 = 5506$ and $\Sigma xy = 3467$

   Find coefficient of correlation and The line of regression of y or x.

   (b) Fit a curve of the form $y = ab^x$ from the following data:

x:	2	3	4	5	6
y:	144	172.8	207.4	248.8	298.6

5. Discuss different issues in statistical quality improvement programmes.

6. 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.

7. Two bolts are drawn from a box containing 4 good and 6 bad bolts. Find the probability that the second bolt is good if the first one found to be bad.

8. If X is continuous Write random variable with probability density function

   $$f(x) = \begin{cases} \dfrac{1}{2} \sin x, & \text{for } 0 \le x \le \pi \\ 0 & \text{elsewhere} \end{cases}$$

   Find the mean, mode, median of the distribution.

9. 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

10. Explain about One-tailed and Two-tailed tests.

ASSIGNMENT - 2

M.C.A. DEGREE EXAMINATION, MARCH 2023

Second Year

PROBABILITY AND STATISTICS
MAXIMUM : 30 MARKS

ANSWER ALL QUESTIONS

1. Obtain the regression lines to the data given below:

$$X: \quad 6 \quad 2 \quad 10 \quad 4 \quad 8$$

$$Y: \quad 9 \quad 11 \quad 5 \quad 8 \quad 7$$

2. Explain steps involved in computation of one-way Analysis of Variance?

3. What are the major parts of a Control Charts?

4. State Beyes Rule

5. Find the probability of getting 4 heads when 6 coins tossed.

6. Define the terms random experiment.

7. What is the use of control charts?

8. Define statistical quality control.