PG–572 **MSC-1**

M.Sc. DEGREE EXAMINATION – DECEMBER 2019.

First Year

Computer Science

MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE

Time : 3 hours Maximum marks : 75

SECTION A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Construct the truth table for the following

   (a) $A \vee (B \wedge C) \Leftrightarrow (A \vee B) \wedge (A \vee C)$

   (b) $A \wedge (B \vee C) \Leftrightarrow (A \wedge B) \vee (A \wedge C)$

2. Prove $(P \wedge q) \rightarrow (P \vee q) \equiv T$.

3. Ten passengers get on an airport shuttle at the airport. The shuttle has a route that includes 5 hotels, and each passenger gets off the shuttle at his/her hotel. The driver records how many passengers leave the shuttle at each hotel. How many different possibilities exist?

4. What is pigeonhole principle? Give a suitable examples.

5. Check that $a_n = 2^n + 1$ is a solution to the recurrence relation $a_n = 2a_{n-1} - 1$ with $a_1 = 3$.

6. How does the Huffman code work? Explain.

7. Draw a finite state automata that will accept the word Banana while using only 3 states.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Prove without using truth table
$((p \vee q) \wedge ((p \to r) \wedge (q \to))) \to r.$

9. Six people of different heights are getting in line to buy donuts. Compute the number of ways they can arrange themselves in line such that no three consecutive people are in increasing order of height, from front to back.

10. Explain the following

(a) Relations and Databases

(b) Properties of relations

11. To prove 'A digraph has at least one root if and only if it is quasi-strongly connected'.

12. Discuss following with suitable diagram

    (a) Directed graph

    (b) Undirected graph

    (c) Degree of vertex

    (d) Null graph

    (e) Acyclic Graph

13. Design a DFA (deterministic finite automata) to accept the language Li = $\{\alpha \in \{a,b,c\}^* | \alpha$ starts and ends with the same symbol$\}$.

    Only draw the transition diagram, and clearly indicate the start state and the final state(s).

14. Show a derivation of the string $a^2b^3c^2d^3$ according to your grammar.

PG–573 **MSC–2**

M.Sc. DEGREE EXAMINATION – DECEMBER 2019.

First Year

Computer Science

DATA STRUCTURES

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Explain non-linear data structure with its types.

2. Elucidate queue with example. Explain various techniques in queue.

3. Explain skew heaps with example.

4. Write short notes on binomial heaps with example.

5. Explain Binary search tree with example.

6. Write short notes on splay trees.

7. Write short notes on TV Trees with algorithm.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Distinguish doubly linked list and circular linked list with example.

9. Explain Binary tree traversal techniques with an example.

10. Brief short noted on non recursive techniques with example.

11. Differentiate Min-max heaps and Fibonacci heaps with its technique.

12. Brief B-tree and its techniques with algorithm.

13. Write brief notes on point quad trees and R-trees.

14. Briefly explain stack with example and its application.

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PG–574 **MSC–3**

M.Sc Computer Science DEGREE EXAMINATION — DECEMBER, 2019.

First Year

COMPUTER GRAPHICS

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Describe briefly about CRT design.

2. Explain circle drawing algorithm.

3. What are color table and grayscale system?

4. What is pivot point rotation in 2D transformations? Explain.

5. What is clipping? Explain point clipping with example.

6. Discuss briefly on three dimensional display methods.

7. Write brief note on Backface detection.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Discuss elaborately about raster scan display.

9. Explain DDA and Bresenham's line drawing algorithms with example.

10. Discuss about line attributes specifications.

11. Gibe explanation for 2D scaling and rotation of an object with example.

12. Explain line and polygon clipping algorithms with example.

13. Give discussion on parallel projection in two dimensional concepts.

14. Write elaborate note about depth buffer method.

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PG–575 **MSC–04**

M.Sc. DEGREE EXAMINATION – DECEMBER, 2019.

First Year

Computer Science

OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Why do we need modelling?

2. How do we create a class and important parts of the class?

3. Write brief note on stereotype.

4. Draw the object diagram for library management system.

5. How do we call events?

6. Explain briefly about trace relationships.

7. Discuss briefly on component diagrams.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Discuss the modelling architecture of the system.

9. Explain in detail about multiple inheritance.

10. What are types of interaction diagram? Draw and explain the interaction diagram for ATM system.

11. Draw the use case diagram for the following

    (a) Credit card validation system

    (b) Website creation.

12. Explain the following

    (a) Draw the state diagram for banking system

    (b) Explain the life style of an object.

13. Give discussion on different ways to use the development model.

14. Explain the following

    (a) Usability principles. (6)

    (b) Database schema. (4)

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PG–576 **MSC–5**

M.Sc. DEGREE EXAMINATION – DECEMBER, 2019.

First Year

Computer Science

ADVANCED DBMS

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Write short notes on server system architecture.
2. Compare between parallel systems and distributed systems.
3. Explain about encapsulation of operations.
4. Describe about recursive queries in SQL.
5. Discuss about spatial DB implementation.
6. Summarize about transaction commit protocols.
7. Explain about biological data management.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain in detail about parallel databases. With example.

9. Describe in detail about object DB standards, languages and design.

10. Briefly discuss about implementation of rules and recursion.

11. Write brief notes on syntax and semantics of dialog languages.

12. Discuss briefly about effect of mobility on data management.

13. Explain in detail about data storage systems on the cloud.

14. Describe in detail about XML query languages.

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PG – 577 **MSC–6**

M.Sc. DEGREE EXAMINATION — DECEMBER, 2019.

First Year

Computer Science

COMPUTER ARCHITECTURE

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions

1. Explain about parallelism in uniprocessor systems.

2. Write short notes on Feng's classification.

3. Compare between temporal and data parallel processing.

4. Describe about data buffering and busing structure.

5. Illustrate about the requirements of vector processing.

6. Explain about cube interconnection network.

7. Write short notes on searching in parallel algorithms.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain in detail about handlers' classification with example.

9. Describe in detail about delays in pipeline execution.

10. Write brief notes on principles of linear pipelining.

11. Briefly discuss about job sequencing and collision prevention.

12. Explain in detail about multiprocessor architecture.

13. Elaborate about programming functional structures.

14. Describe in detail about matrix operations with example.

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PG - 578 **MSC - 7**

M.Sc. DEGREE EXAMINATION — DECEMBER, 2019.

First Year

Computer Science

MOBILE COMPUTING

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer FIVE the questions.

1. Differentiate mobile computing from wireless networking.

2. Discuss the components of Mobile computing.

3. What is the mobile node? Give Examples.

4. What is MSC? Explain its role.

5. What are reactive protocols?

6. Discuss issues on ADHOC wireless network.

7. Describe system power management scheme.

PART B — (5 × 10 =50 marks)

Answer any FIVE questions.

8. Describe the design consideration for mobile computing.

9. Describe Three tire architecture of Mobile computing with neat diagram.

10. Explain the following terms associated with mobile IP

    a) Home address b) Home Agent c) Foreign Agent d)Foreign Network e)Home network

11. Express brief account of route optimization in Mobile IP.

12. Describe GSM architecture and its services in detail.

13. Discuss issues and challenges in proving QOS in ADHOC wireless networks.

14. Compare ad hoc wireless networks with sensor network.

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PG-579 **MSC-8**

M.Sc. DEGREE EXAMINATION – DECEMBER 2019

First Year

Computer Science

DATA WAREHOUSING AND DATA MINING

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Compare OLTP and OLAP systems.

2. Briefly describe any two data smoothing techniques.

3. Briefly describe the techniques involved in attribute subset selection.

4. Briefly describe Apriori algorithm used for finding frequent itemsets.

5. Briefly explain the various criteria used for comparing and evaluating classification and prediction methods.

6. Briefly describe multilayer feed-forward network.

7. Briefly describe outlier analysis for data clustering.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe the various components of three tier architecture of data ware house with a neat diagram.

9. Explain various concept hierarchy generation techniques which are helpful for discretization.

10. Explain the basics of descriptive data summarization and various techniques for descriptive summarization in detail.

11. Describe various ways for mining different types of association rules.

12. Describe how decision tree induction supports classification.

13. Explain how SVM is used for classification and regression.

14. Describe various techniques for effective clustering of high dimensional data.

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PG-580 **MSC-9**

M.Sc. DEGREE EXAMINATION – DECEMBER 2019

First Year

Computer Science

ANALYSIS OF ALGORITHMS

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Write down the performance analysis of algorithm.

2. Write the analysis of Quick sort.

3. Explain Binary search.

4. Write a short note on Dynamic programming.

5. Graph coloring Problem: Explain.

6. What are the basic concepts of NP-Hard and NP-Complex problem?

7. Write a note on Modular Arithmetic.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain time complexity and Space complexity.

9. Use Divide and Conquer method to solve Binary search.

10. Solve the all pair shorter path by dynamic programming.

11. (a) Explain 8-Queens problem.

    (b) Explain Knapsack problem by back tracking.

12. Solve Hamiltonian Cycles problem using back tracking.

13. Write in detail about NP-Hard and NP-Complex porblem.

14. How to implement parallel assignment instructions.

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PG–581 **MSC–10**

M.Sc. DEGREE EXAMINATION —
DECEMBER 2019.

First Year

Computer Science

ADVANCED SOFTWARE ENGINEERING

Time : 3 hours Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What is System model?

2. Give a note on Formal specification.

3. What is real time system?

4. Write about user interface design.

5. What is Software evolution?

6. Give a note on Clean room software engineering.

7. What is Software Economics?

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain: Software requirements and process.

9. Explain in detail about Application Architecture.

10. Explain: Software reusability and iterative software development.

11. Explain in detail about Soft systems.

12. Explain: Real time systems.

13. Write in detail about Software Quality.

14. Write about the Economics and metrics of software.

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