

M.Sc. (CS) DEGREE EXAMINATION –
JUNE, 2019.

First Year

MATHEMATICAL STRUCTURES FOR CS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. $(P \rightarrow Q) \wedge (Q \rightarrow P) = P \leftrightarrow Q$ + Prof using truth table.
2. $\sim(P \vee \sim(P \wedge Q)) = F$ (All are false – Contradiction).
3. Using Venn diagram + proof –
 $(A - B) - C = (A - C) - (B - C)$.
4. Write short notes on Number theory.
5. Linear recurrence relations – Procedures + Write its steps with suitable example.
6. Write short note on following :
 - (a) Binary relation
 - (b) Reflexive relation.
7. Finite-automation state transition table and accepts bit-strings representing numbers divisible by 5.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Proof :
- (a) $\sim(P \wedge Q) \rightarrow (\sim P \vee (\sim P \vee Q)) \Leftrightarrow (\sim P \vee Q)$
- (b) $(P \vee Q) \wedge (\sim P \wedge (\sim P \wedge Q)) \Leftrightarrow (\sim P \wedge Q)$
9. Proof + Any six steps – $R \wedge (P \vee Q) = P \vee Q$, $Q \rightarrow R$,
 $P \rightarrow M$ and $\sim M$.
10. (a) Exactly 2 prefects – 2100
(b) Atleast 2 prefects – 5790.
11. Proof using mathematical induction
 $1^2 + 2^2 + 3^2 + \dots + n^2 = n(n+1)(2n+1)/6$.
12. Discuss in detail about spanning trees.
13. (a) Define Hamiltonian circuit with examples.
(b) Define Decision tree with examples.
14. Discuss in detail about finite state machine.

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**M.Sc. DEGREE EXAMINATION –
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First Year

DATA STRUCTURES

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Write short note on linear data structure.
2. List the advantages of Linked List.
3. Describe Binary Tree notations with an example.
4. Explain time complexity analysis of algorithms.
5. What is heap. List the application of heaps.
6. Explain AVL Trees construction.
7. Define Quad trees. Compare Quad Tree vs MX Quad Tree.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain STACK operations PUSH and POP with pseudo code and example?
 9. Discuss Recursive and Non recursive algorithm with example.
 10. Explain Binary Tree Traversal Methods.
 11. Brief on different representation structures of Graph.
 12. Explain Binomial Heaps.
 13. Write short note on splay trees and its applications.
 14. Brief on K-d Trees.
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MSC-3

**M.Sc. Computer Science DEGREE
EXAMINATION – JUNE 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. Give 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.

M.Sc. DEGREE EXAMINATION – JUNE 2019.

First Year

OBJECT ORIENTED ANALYSIS AND DESIGN

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Discuss briefly on four principles of modelling.
2. What are the importance of modelling?
3. What are the four degrees of visibility to packages?
4. How do we model an object structure?
5. List out the five standard stereotypes that apply to components.
6. Explain briefly on types of relationship in object mapping.
7. Write short note on component diagram.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Give elaborate note on UML architecture.
9. Give discussion on three compartments of classes.
10. Discuss in detail on four-common mechanism of UML.1.
11. Explain class diagrams and its common properties
12. Explain in detail on several parts of the state.
13. Explain the following with guidelines
 - (a) Test cases
 - (b) Test plan
14. Discuss the mapping of object model into database schema with suitable example.

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MSC-5

**M.SC DEGREE EXAMINATION —
JUNE, 2019.**

First Year

ADVANCED DATABASES

Time : 3 Hours

Maximum marks : 75

PART A — (5 × 5 =25 marks)

Answer any FIVE questions.

1. Explain about inter and intra query parallelism.
2. Write note on distributed data storage.
3. Discuss about object identity and object structure.
4. Describe about the logic of query languages.
5. Write note on the overview of temporal databases.
6. Summarize about the location and handoff management.
7. Explain about native XML databases.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe in detail about centralized and client - server architecture.
 9. Explain in detail about object relational features in SQL/Oracle.
 10. Write brief notes on design principles for active rules.
 11. Elaborate in detail about the overview of temporal databases.
 12. Give detailed description about mobile transaction models.
 13. Briefly discuss about storing XML in databases.
 14. Write brief notes on Big Data Storage and analysis.
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MSC-6

**M.Sc. DEGREE EXAMINATION
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First Year

COMPUTER ARCHITECTURE

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Write note on the overview of parallel processing.
2. Explain about utilizing temporal parallelism.
3. Compare between temporal and data parallel processing.
4. Discuss about pipelined vector processing methods.
5. Describe about SIMD array processors.
6. Explain about Exchange and omega networks.
7. Write short notes on sorting in parallel algorithms.

PART B — (5 × 10 = 50 marks)

Answer any FIVE question

8. Explain in detail about Flynn's classification with suitable diagram.
 9. Elaborate in detail about the trends towards parallel processing.
 10. Describe in detail about data parallel processing with specialized processor.
 11. Briefly discuss about instruction level parallel processing.
 12. Describe in detail about classification of pipeline processors.
 13. Explain in detail about SIMD interconnection networks.
 14. Write brief notes on models of computation.
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**M.Sc. DEGREE EXAMINATION
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First Year

MOBILE COMPUTING

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Differentiate between Traditional IP and Mobile IP?
2. What are main subsystems of GSM architecture?
3. List the advantages of mobile computing.
4. What are proactive protocols?
5. Generalize the limitations of GPRS
6. Discuss classification of QOS approaches.
7. Analyse the need for Ad Hoc networks.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe the Components of wireless environment.
 9. Discuss how to develop Mobile GUTs.
 10. Identify at least four similarities and four dissimilarities between a GSM network and UMTS network.
 11. Explain the operation of mobile IP with the help of a suitable schematic diagram.
 12. What are the characteristics of mobile ad hoc network?
 13. Discuss any one Table driven routing protocol used in ADHOC mobile networks.
 14. Describe any one sensor network architecture in detail.
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**M.Sc. DEGREE EXAMINATION
JUNE 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. Differentiate operational database systems and data warehouses.
2. Briefly describe the reasons for preprocessing data.
3. Briefly describe the strategies for data reduction.
4. Briefly describe the steps involved in association rule mining.
5. Describe the preprocessing used for improving accuracy, efficiency and scalability of classification and prediction.

6. Briefly describe the approaches of tree pruning.
7. Briefly describe various types of hierarchical clustering.

PART B — ($5 \times 10 = 50$ marks)

Answer any FIVE questions.

8. Explain how data cubes model n-dimensional data. Also, explain how they can be used in basic OLAP operations to allow interactive mining at multiple levels of abstraction.
9. Describe in detail various techniques involved in data integration and transformation.
10. Explain the basics of descriptive data summarization and various techniques for descriptive summarization in detail.
11. Describe in detail constraint based association mining with suitable examples.
12. Elaborate how classification can be performed by decision tree induction.
13. Describe the basics of probability notation and Bayes' theorem. Explain how Bayesian classification can be performed.
14. Describe partitioning and grid-based methods for clustering.

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M.Sc. DEGREE EXAMINATION –
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First Year

ANALYSIS OF ALGORITHMS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. What is Performance Analysis?
2. Explain – Randomized Algorithms.
3. What is minimum cost spanning tree?
4. Explain Hamiltonian Cycles.
5. What is Branch and Bound?
6. Give a note on Modular Arithmetic.
7. What is NP-Hard Problem?

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain: Computational Complexity and Average case Analysis.
 9. Explain Binary Search in Divide and Conquer method.
 10. Explain: Single Source Shortest path.
 11. Solve 0/1 Knapsack problem by dynamic programming method.
 12. Solve Sum of Subsets and graph Coloring by back tracking method.
 13. Travelling Salesperson Decision problem — Solve.
 14. Explain the evaluation and Interpolation of Algebraic problems.
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MSC-10

M.Sc. DEGREE EXAMINATION –
JUNE 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. Write about the Socio-technical systems.
2. What is RE process?
3. Explain the Architectural Design.
4. Write a short note on Iterative Software Development.
5. Clean room software engineering: Explain.
6. What are the basic concepts of software development?
7. Risk Management : Give a brief note.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain
 - (a) Software Requirements
 - (b) System Models
 9. Write in detail about Critical Systems Specifications.
 10. Give a detailed explanation for Object Oriented Design.
 11. (a) Explain Software reuse.
(b) Explain CBSE.
 12. Agile Software engineering : Explain.
 13. Write in detail about Extreme Programming.
 14. Software Metrics : Explain.
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