

M.Sc. (C.S.) DEGREE EXAMINATION –  
DECEMBER, 2018.

First Year

MATHEMATICAL STRUCTURES FOR COMPUTER  
SCIENCE

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions.

1. Show that  $(P \rightarrow Q) \wedge (Q \rightarrow P)$  is logically equivalent to  $P \Leftrightarrow Q$ .
2. Use the Logical equivalence above to show that  $\sim (P \vee \sim (P \wedge Q))$  is a contradiction.
3. Show that  $(A - B) - C = (A - C) - (B - C)$ .
4. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?
5. How to solve linear recurrence relations? Write its steps with suitable example.

6. What is binary relations? Write its properties.
7. Draw a finite-automaton state transition table that accepts bit-strings representing numbers divisible by 5.

PART B — ( $5 \times 10 = 50$  marks)

Answer any FIVE questions.

8. Show that
  - (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. Show that  $R \wedge (P \vee Q)$  is valid conclusion from the premises  $P \vee Q$ ,  $Q \rightarrow R$ ,  $P \rightarrow M$  and  $\sim M$ .
10. A class consists of 15 boys of whom 5 are prefects. How many committees of 8 can be formed if each consists of
  - (a) exactly 2 prefects
  - (b) at least 2 prefects?
11. Use mathematical induction to prove that
 
$$1^2 + 2^2 + 3^2 + \dots + n^2 = n(n+1)(2n+1)/6$$

12. What is a Minimum Spanning Tree? How to Finding Minimum Spanning Trees? Explain.
  13. Briefly explain with suitable example the following :
    - (a) Hamiltonian Circuit
    - (b) Decision Trees
  14. Define the states of the finite state machine and draw the state diagram.
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**MSC-02**

**M.Sc. (CS) DEGREE EXAMINATION –  
DECEMBER, 2018.**

**First Year**

**Computer Science**

**DATA STRUCTURES**

**Time : 3 hours**

**Maximum marks : 75**

**SECTION A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Write an algorithm for PUSH and POP operation in a stack.
2. Write the procedures to perform the DFS search of a graph.
3. Explain the binary heap in detail.
4. What are the various transformation performed in AVL tree? Explain.
5. With an example, explain R-Trees.

6. Discuss in detail the applications of data structures.
7. Explain in detail about Multi-way Search Trees.

SECTION B — ( $5 \times 10 = 50$  marks)

Answer any FIVE questions.

8. Explain operations of doubly linked List in detail with routine of add, delete node from DLL.
9. With an example, explain how will you measure the efficiency of an algorithm.
10. Write short notes on following :
  - (a) Fibonacci Heaps
  - (b) Lazy-Binomial Heaps
11. Explain the various operations in binary search tree with example.
12. What are the basic operations that can be performed on a k-d Trees? Explain with suitable example.
13. State and explain the operation on circular linked list.
14. Explain in detail about Red-Black trees.

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**MSC-3**

**M.Sc. (CS) DEGREE EXAMINATION –  
DECEMBER, 2018.**

**First Year**

**COMPUTER GRAPHICS**

**Time : 3 hours**

**Maximum marks : 75**

**SECTION A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. Explain about the DDA algorithm for line drawing.
2. Write short notes on Graphics software.
3. Write short notes on Line attributes.
4. List and explain area fill algorithms.
5. Write short notes on parallel projection.
6. Discuss on Visible Line algorithm.
7. What is depth curing? Explain it.

SECTION B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain about the Line drawing algorithm.
  9. Explain in detail about interactive picture construction techniques.
  10. Explain in detail about the physical input device.
  11. Discuss about three dimensional transformations.
  12. Describe the Depth buffer method.
  13. Explain two dimensional display methods.
  14. Discuss any two visible surface detection methods.
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**MSC-5**

M.Sc. DEGREE EXAMINATION –  
DECEMBER, 2018.

First Year

ADVANCED DBMS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 5 = 25 marks)

Answer any FIVE questions

1. Write notes on Inter and Intra Query parallelism.
2. Explain about distributed database design.
3. Describe about type and class hierarchies.
4. Discuss about encapsulation of operations.
5. Write notes on taxonomy of active databases.
6. Explain about data warehousing and data mining.
7. Describe about data storage system on the cloud.



PART B — (5 × 10 = 50 marks)

Answer any FIVE questions

8. Write brief notes on centralized and client server architecture.
9. Explain in detail about object database standards, languages and design.
10. Write brief notes on overview of deductive databases.
11. Describe in detail about spatial data structures and DB implementations.
12. Discuss briefly about mobile transaction models.
13. Illustrate the procedure of storing XML in databases.
14. Explain in detail about cloud storage architectures.

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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 notes on Handler's classification.
2. Discuss about trends about parallel processing.
3. Compare task and data parallel processing.
4. Describe about instructional level parallel processing.
5. Explain about data buffering and busing structure.
6. Write notes on cube interconnection network.
7. Discuss about sorting and searching in parallel algorithms.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions

8. Explain in detail about architectural classification schemes.
9. Discuss in detail about the overview of parallel processing.
10. Describe in detail about solving problems in parallel processing.
11. Write brief notes on general pipeline and reservation tables.
12. Explain the process of job sequencing and collision prevention.
13. Describe in detail about multiprocessor architecture.
14. Write brief notes on analysis of parallel algorithms prefix computation.

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**MSC-7**

**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. Discuss about modern mobile device features.
2. Write about device connectivity.
3. Discuss the advantages of WLAN.
4. Define Modulation. Discuss different analog modulation schemes.
5. What do you mean by tunneling and reverse tunneling?
6. Write about QOS in ADHOC wireless Networks.
7. Describe Clustered Architecture for WSN.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe the design consideration for mobile computing.
  9. Explain any one mobile enabled application.
  10. Explain about the TDMA.
  11. Describe Blue tooth architecture.
  12. Explain how mobile IP packet delivered with example.
  13. Discuss the issues in designing a routing protocol for AD HOC wireless network.
  14. Compare WSN with Ad Hoc Wireless Networks.
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**MSC-8**

**M.Sc. DEGREE EXAMINATION –  
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**First Year**

**DATA WAREHOUSING AND DATA MINING**

Time : 3 hours

Maximum marks : 75

**PART A — (5 × 5 = 25 marks)**

Answer any FIVE questions.

1. Describe the OLAP operations in the multidimensional data model.
2. Describe various strategies for data reduction.
3. Briefly describe how association rules can be generated from frequent itemsets.
4. Write and explain various approaches for mining multilevel association rules.

5. Describe the criteria used for comparing classification and prediction methods.
6. Explain how linear regression is useful in prediction.
7. Describe various types of data in cluster analysis.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Describe the various components of three tier architecture of data warehouse with a neat diagram.
9. Explain
  - (a) Dimensionality reduction (5)
  - (b) Data transformation. (5)
10. Describe various ways for mining different types of association rules.
11. Elaborate how classification can be performed by decision tree induction.

12. What is meant by ensemble method? Explain various ensemble methods used for increasing the accuracy.
  13. Explain the working principle of SVM along with its applications in classification and regression.
  14. Describe various approaches for effective clustering of high dimensional data.
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**MSC-9**

**M.Sc. DEGREE EXAMINATION —  
DECEMBER 2018.**

**First Year**

**ANALYSIS OF ALGORITHMS**

Time : 3 hours

Maximum marks : 75

**SECTION A — (5 × 5 = 25 marks)**

Answer any FIVE questions.

1. Discuss about Recursive Algorithm with an example.
2. Write a algorithm for interactive binary search.
3. Write short notes on I/O Knapsack.
4. Discuss about the fifteen puzzle.
5. Write short notes single source shortest path.
6. Write a algorithm fro straight forward evaluation.
7. Discuss about the Traveling sales person decision problem.

SECTION B — ( $5 \times 10 = 50$  marks)

Answer any FIVE questions.

8. Explain space complexity with an example.
  9. Discuss about merge sort with an example.
  10. Explain Knapsack problem.
  11. Discuss about optimal binary search Trees.
  12. Explain sum of subsets problem with an example.
  13. Briefly explain modular arithmetic.
  14. Discuss about general interactive backtracking methods.
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**MSC-10**

**M.Sc. DEGREE EXAMINATION —  
DECEMBER, 2018.**

**First Year**

**ADVANCED SOFTWARE ENGINEERING**

**Time : 3 hours**

**Maximum marks : 75**

**PART A — (5 × 5 = 25 marks)**

**Answer any FIVE questions.**

1. What is Software dependability?
2. Give a note on User interface design.
3. What is critical system development?
4. Write about Clean room software engineering.
5. What is Software metrics?
6. Give a note on Formal Specification.
7. How to maintain software?

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

8. Explain: Software requirements and processes.
  9. Explain in detail about Distributed System Architecture.
  10. Explain: Software reusability and iterative software development.
  11. Explain in detail about Agile Software Engineering.
  12. Explain: Risk Management.
  13. Write in detail about Application Architecture.
  14. Write about the Economics and Quality of software.
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