

MCA

Model Question Papers I MCA I Semester

(w.e.f AB 2023-24 onwards)

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

**I MCA I Semester
23MCAT101 Discrete Mathematical Structures
MODEL QUESTION PAPER**

Time: 3 hrs.

Max. Marks: 70

**SECTION- A (5 X 10 = 50 M)
Answer ALL Questions**

1. (a) Show that $p \rightarrow q$ and $\neg q \rightarrow \neg p$ are logically equivalent. (10 M)
(or)
(b) Explain the properties of relations with an example. (10 M)
2. (a) What is Pigeon hole principle? Find the minimum number of students in a class (10 M)
to be sure that three of them are born in the same month.
(or)
(b) In a class of 25 students, 12 have taken mathematics. 8 have taken mathematics (10 M)
but not biology. Find the number of students who have taken mathematics and
biology and those who have taken biology but not mathematics.
3. (a) What is bipartite graph? Show that C_6 is a bipartite graph. (10 M)
(or)
(b) Define Chromatic number. What is the chromatic number of K_n ? (10 M)
4. (a) Explain Tree Traversal methods. (10 M)
(or)
(b) Explain Kruskal's algorithm with an example. (10 M)
5. (a) Find the sum of products expansion for the function $F(x,y,z) = (x+y)\bar{z}$ (10 M)
(or)
(b) Explain Finite state machine with output. (10 M)

SECTION-B (5 X 4 = 20 M)

Answer any FIVE Questions of the following.

6. Construct the truth table for $p \wedge (\sim q \vee q)$.
7. Prove $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.
8. State and prove Hand shaking theorem.
9. Isomorphism of Graphs.
10. Properties of Trees.
11. Depth First search.
12. Basic Logic Gates.
13. Types of Grammars.

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

I MCA I Semester

20MCAT12 MANAGEMENT ACCOUNTANCY

MODEL QUESTION PAPER

Time: 3 Hrs

Max Marks: 70

SECTION- A (5 X 10 = 50 M)

Answer ALL Questions

1. a) Define Accounting Process? Explain various Branches of Accounting. [10]
(OR)
b) Give detailed format of Trading A/C, P&L A/C and Balance Sheet. [10]
2. a) What do you mean by financial statement analysis? Explain the importance of Ratio analysis in analyzing the financial strength of an organization? [10]
(OR)
b) Distinguish between Funds flow and Cash flow analysis [10]
3. a) Explain Nature and Importance of Costing with basic Principles? [10]
(OR)
b) Explain the nature and importance of budgets and budgetary control in planning and coordinating the financial activities of an organization? [10]
4. a) What do you mean by Marginal Costing explain its Nature, Scope and its importance? [10]
(OR)
b) Calculate P/V Ratio , BEP and Margin of Safety from the following data of a Manufacturing Enterprise

Selling price	10 Rs
Variable Cost	6 Rs
Fixed Cost	40,000 Rs
Actual Sales	16,500 Units

 [10]
5. a) What are the various types of documents used for data collection in computerized Accounting system? [10]
(OR)
b) Explain the importance of coding logics in computerized accounting system? [10]

SECTION – B (5 × 4 = 20 Marks)

Answer any FIVE Questions

6. Basic Books of Accounting
7. Double Entry System
8. Type of Ratios
9. Working Capital Cycle
10. Master Budget
11. Flexibility budget
12. Break Even Point
13. Master File

S.V.K.P & Dr. K.S RAJU ARTS AND SCIENCE COLLEGE(A), PENUGONDA
I MCA I SEMESTER
23 MCAT103 : C PROGRAMMING AND DATA STRUCTURES
MODEL QUESTION PAPER

Time : 3hrs

Max. Marks : 70

SECTION - A

Answer ALL questions (5 x 10 marks = 50 Marks)

1. (a) What are various operators in C? List and explain
or
(b) What are various Loop structures in C? Explain while and do-while with examples
- 2.(a) What is an Array? Explain how to create a 2D? Write a C program for addition of two matrices.
or
(b) What is a function? Explain how to pass values to a function? Write a C program to find the NCR using function.
- 3.(a) What is a Pointer? Write a C program to swap the two values using pointers?
or
(b) What is Dynamic Memory Allocation? Explain with an example how this is useful in writing programs?
- 4.(a) What is a Structure? Explain Array of Structures and arrays with in the structures?
or
(b) What is a Stack? Explain various stack operations with examples.
- 5.(a) What is a Binary Tree? Explain Binary Tree Traversals with an examples.
or
(b) Write and explain the Quick Sort with an example.

SECTION - B

Answer Any FIVE questions (5 x 4 marks = 20 Marks)

6. Switch construct
7. Recursive functions
8. C Pre-processor
9. Command Line arguments
10. Unions
11. Formatted I/O
12. Types of Queues
13. Doubly Linked List

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

**I MCA I Semester
23MCAT104 COMPUTER ORGANIZATION
MODEL QUESTION PAPER**

Time: 3 Hrs

Max Marks: 70

SECTION- A(5 X 10 = 50 M)

Answer ALL Questions

1. a) What is Flip-Flop? Explain various types of Flip-Flop.
(Or)
b) Write about Multiplexers and also Construct 8 to 1 Line multiplexers.
2. a) Explain about the floating point representation.
(Or)
b) Explain about the Bus and Memory Transfers.
3. a) Draw and Explain 8085 microprocessor Architecture.
(Or)
b) Describe the mechanism of an instruction cycle.
4. a) Explain about the addressing modes.
(Or)
b) Write about Asynchronous data transfer methods.
5. a) Explain DMA transfer with block diagram.
(Or)
b) Explain the mapping process of Cache memory.

SECTION – B (5 X 4M = 20 M)

Answer any FIVE of the following

6. Logic Gates
7. Decoders
8. Complements
9. RTL
10. Timing and Control
11. Stack Organization
12. I/O Interface
13. Virtual memory

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

**I MCA I Semester
23MCAT105 OPERATING SYSTEMS
MODEL QUESTION PAPER**

Time: 3 Hrs

Max Marks: 70

SECTION- A(5 X 10 = 50 M)

Answer ALL Questions

1. a) Explain Evolution of Operating Systems. (10M)
(OR)
b) Explain various Preemptive CPU Scheduling algorithms. (10M)
2. a) Discuss Producer-Consumer Problem. (10M)
(OR)
b) What is Deadlock? How to prevent deadlocks in the system. (10M)
3. a) Differentiate Paging and Segmentation. (10M)
(OR)
b) Explain various Page Replacement Algorithms. (10M)
4. a) Explain File allocation methods. (10M)
(OR)
b) Write a short notes on Disk Management and explain Disk Scheduling algorithms. (10M)
5. a) Describe protection concepts and mechanisms provided by an operating system. (10M)
(OR)
b) Explain OS Concepts with respect to LINUX. (10M)

SECTION – B (5X4=20 Marks)

Answer any FIVE Questions

- 6) Threads.
- 7) Dining Philosophers Problem.
- 8) Semaphores.
- 9) File Operations.
- 10) Disk structure.
- 11) Methods for Handling Deadlocks.
- 12) Access matrix.
- 13) Thrashing.

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

I MCA I Semester

**20MCAT16 Design and Analysis of Algorithms
Model Question Paper**

Time : 3 Hours

Max. Marks : 70

SECTION – A (5X10=50 Marks)

Answer ALL Questions

1. a) Define Algorithm. Explain fundamentals of Algorithmic problem solving.
(OR)
b) Define space and time complexity. Explain different types of Asymptotic notations.
2. a) Explain divide and conquer solution for quick sort. Illustrate with examples.
(OR)
b) Explain DFS and BFS search using decrease and conquer technique with examples .
3. a) Define Transform Technique.Explain Heap sort Algorithm with example.
(OR)
b) Explain Floyd's algorithm for all-pairs shortest path problem with an example.
4. a) Explain Greedy method.Discuss Prim's algorithm for minimum spanning tree.
(OR)
b) Explain NP-Complete and NP-Hard problems.
5. a) Explain n-queens problem using backtracking technique with example.
(OR)
b) Explain Travelling Salesperson Problem using Branch and Bound with example.

SECTION – B (5X4=20 Marks)

Answer any FIVE Questions

6. Analysis of recursive algorithm.
7. Selection sort.
8. Problem reduction.
9. Warshall's algorithm.
10. Subset sum problem.
11. Algorithm Visualization.
12. Topological sorting.
13. Kruskal's Algorithm.

SVKP & Dr K S RAJU A & S COLLEGE (A) ,PENUGONDA
I MCA I SEMESTER
SUBJECT : FUNDAMENTALS OF COMPUTERS

BRIDGE COURSE (23MCAT110)
(For General B.Sc/B.A./B.Com Students - w.e.f : 2023-24 Admitted Batch)

Time:3 Hours

Max.Marks:70

SECTION – A

Answer any FIVE Questions (5 X 10==50 Marks)

1. a) Explain about Block diagram of computer ?
(or)
b) Define Software ? Explain about types of Softwares ?
2. a) Explain about functions of Operating system ?
(or)
b) Explain DOS Internal and External Commands?
3. a) Explain about Mail Merge in MS-Word?
(or)
b) Explain how to create a Presentation in MS-Powerpoint?
4. a) Explain different types of Network topologies ?
(or)
b) Explain creating an E-mail account, sending and receiving E-mails ?
5. a) Explain about Structured programming concepts ?
(or)
(b) Explain about Assemblers, Compilers and Interpreters?

SECTION – B

Answer any FIVE Questions

5 X 4 = 20 Marks

6. Explain types of computers?
7. Explain Binary Number System?
8. Explain types of Operating Systems?
9. Features of Word Processor?
10. Explain Headers & Footers in MS-Word
11. Explain about Function Wizard in MS-Excel
12. Explain WAN?
13. Explain Web Browsers?

S.V.K.P & Dr. K.S RAJU ARTS AND SCIENCE COLLEGE(A), PENUGONDA
I MCA II SEMESTER
23 MCAT201 : COMPUTER NETWORKS
MODEL QUESTION PAPER

Time : 3hrs

Max. Marks : 70

SECTION - A

Answer ALL questions (5 x 10 marks = 50 Marks)

1. (a) Explain TCP/IP reference model with its neat sketch
or
(b) What is Multiplexing? Explain various categories of Multiplexing.
- 2.(a) What are various Error Detection Mechanisms ? Explain CRC with an example
or
(b) Explain IEEE standard 802.3 for LAN's and MAN's
- 3.(a) What is Routing? What are various types of Routing Protocols? Explain RIP
or
(b) What are various services of Transport Layer? Explain functioning of UDP
- 4.(a) Explain in detail about DNS
or
(b) Discuss about FTP and TFTP
- 5.(a) What are various Network devices? Explain any five devices
or
(b) Discuss about Mobile Ad-hoc Networks, Sensor Networks

SECTION - B

Answer Any FIVE questions (5 x 4 marks = 20 Marks)

6. Various Topologies for constructing Networks
7. Transmission media
8. Advantage of Selective repeat
9. Logical Addressing
10. Congestion control algorithms
11. WWW
12. Modem
13. Firewalls

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA
I MCA II Semester

23MCAT202 Object Oriented Programming through JAVA
MODEL QUESTION PAPER

Time : 3hrs

Max. Marks : 70

SECTION-A (5 X 10 =50 Marks)

Answer All Questions

1. a) Explain about Principles of Object Oriented Languages.
(Or)
b) What is the purpose of constructor in Java programming? Explain the Constructor Overloading with an example program.
2. a) What is an inheritance? Explain different types of inheritances with examples.
(Or)
b) What is an interface? Write a program to demonstrate multiple inheritance using Interfaces.
3. a) Describe exception handling in Java with examples.
(Or)
b) Explain in details about Thread.
4. a) Discuss about Applet Life Cycle.
(Or)
b) Explain in detail about Event Handling.
5. a) What is AWT? Explain any four components of AWT.
(Or)
b) Explain any five components in SWINGS.

SECTION - B

Answer any THREE questions (5 x 4 = 20 Marks)

6. Applications of OOP
 7. Command line arguments
 8. Abstract class
 9. Access protection
 10. finally block
 11. Thread Priority
 12. Applet Structure
 13. Differences between AWT and Swing.
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SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

**I MCA II Semester (Second Semester)
23MCAT203- DATABASE MANAGEMENT SYSTEMS
Model Question Paper**

Time : 3 Hours

Max. Marks: 70

SECTION – A (5 X 10=50 Marks)

Answer ALL Questions

1. a) Briefly explain about Three-Schema Architecture with neat diagram. (10 M)
(or)
b) Explain Enhanced Entity Relationship model. (10 M)
2. a) Explain in detail about various key constraints used in database system with examples. (10 M)
(or)
b) Explain about Relational Algebra Set Operations with examples. (10 M)
3. a) Design Relational database using ER to relational mapping. (10 M)
(or)
b) Write Schema change statements in SQL. (10 M)
4. a) What is Normalization? Briefly explain different types of normal forms. (10 M)
(or)
b) Discuss Parallelizing Disk access using RAID technology. (10 M)
5. a) Translate SQL queries into relational algebra. (10 M)
(or)
b) Briefly explain Two Phase Locking Protocol. (10 M)

SECTION – B (5 X 4=20 Marks)

Answer Any FIVE Questions

- 6) Define Schema, Instance and Weak entity.
- 7) What is Data Independence?
- 8) Give a brief note on Insert, Delete, and Update Queries in SQL with examples.
- 9) What is View in SQL? Create a view and perform DML operations on it.
- 10) What is Functional Dependency? Classify.
- 11) Give a brief note on Buffering Blocks.
- 12) Tuple Relational calculus.
- 13) Transaction Properties.

S.V.K.P & Dr. K.S RAJU ARTS AND SCIENCE COLLEGE(A), PENUGONDA
I MCA II SEMESTER
23MCAT204 : FORMAL LANGUAGES AND AUTOMATA THEORY
MODEL QUESTION PAPER

Time : 3hrs

Max. Marks : 70

SECTION - A

Answer ALL questions (5 x 10 marks = 50 Marks)

1. (a) Show the following : Let L be a set accepted by an NFA. Then there exists a DFA that accepts L
or
(b) Show the equivalence of NFA with and without ϵ moves
2. (a) Show that the language $L = \{ a^n b^n / n \geq 1 \}$ is not regular.
or
(b) Show that the regular sets are closed under union, concatenation and Kleene closure.
3. (a) State and prove the pumping lemma for CFL
or
(b) Design a Pushdown automata M to accept the language $L = \{ WCW^R : W \in \{a, b\}^* \}$
4. (a) Construct a TM for performing the function $f(w) = w.w^R$
or
(b) What is Halting problem? Prove that Halting problem is unsolvable.
5. (a) Discuss about the resolution with an example in Propositional Calculus.
or
(b) Discuss about the unification algorithm with an example in Predicate Calculus.

SECTION - B

Answer Any FIVE questions (5 x 4 marks = 20 Marks)

6. Definition of NDFA
7. DFA Minimization
8. Chomsky Normal Form
9. Parsing and its types
10. PCP
11. UTM
12. The complement of a recursive language is recursive.
13. Normal forms in Propositional Calculus

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

I MCA II Semester

23MCAT205 Data Mining Concepts and Techniques

MODEL QUESTION PAPER

Time: 3 Hours

Max.Marks: 70

SECTION-A (5 X 10 = 50 Marks)

Answer All Questions

1. a) Explain with a neat diagram the three-tier architecture of a Data Warehouse.
(Or)
b) Why do we pre-process data? Explain different techniques in data cleaning and integration.
2. a) Explain different techniques in data transformation.
(Or)
b) Data Mining should be applicable to any kind of data repositories, including data streams. What are the different kinds of data on which mining can be applied?
3. a) Explain in detail how the data is measured differently in statistical descriptions.
(Or)
b) Explain AOI Algorithm.
4. a) Explain Apriori property and explain the algorithm associated with it.
(Or)
b) What is the difference between Classification and Prediction? How a decision tree is constructed?
5. a) Explain Bayesian Classification Methods. How Classification by back propagation is obtained.
(Or)
b) Explain the partitioning methods in cluster analysis.

SECTION – B (5 x 4 = 20 Marks)

Answer any FIVE Questions

6. OLAP operations
 7. Data Reduction
 8. Data Discretization
 9. Major issues in data mining
 10. Data objects and attribute types
 11. Concept Description
 12. Frequent Item sets using vertical data format
 13. Requirement for Cluster Analysis
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SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA

I MCA II Semester

20MCAT206 (Elective I) – Internet Of things Model Question Paper

Time: 3 Hours**Max. Marks: 70**

SECTION-A (5X 10= 50M)

Answer ALL Questions

1. a) What is the IoT? Explain Design guidelines for IoT (10M)
Or
b) Explain Physical and Logical Design of IoT (10M)
2. a) Explain in detail application of Internet of Things in Smart Cities (10M)
Or
b) Explain M2M. Distinguish between IoT and M2M (10M)
3. a) Explain SDN and NFV for IoT (10M)
Or
b) Explain Design Methodology for IoT Application with an example (10M)

4. a) Explain Logical Design of IoT using Python. Explain various python packages used for IoT (10M)
Or
b) What is Raspberry Pi. Explain Raspberry Pi Board and various interfaces in Raspberry pi. (10M)
Or
5. a) What is Cloud? Explain various Cloud Storage Models used in IoT (10M)
Or
b) Explain Amazon Web Services and SkyNetIoT Messaging Platform. (10M)

Section-B
Answer any FIVE questions (5 x 4 = 20)

6. Explain Characteristics of IoT.
7. Explain IoT Deployment Template.
8. Explain Need for IoT Systems Management
9. Explain NETOPEER
10. Explain various data types used in Python
11. Explain basic building blocks of IoT Device.
12. Explain about Django
13. Restful Web API.