

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

I MCA I Semester 19MCAT11 Probability, Statistics & Queuing Theory MODEL QUESTION PAPER

Time:3 hrs.

Max.Marks: 75

SECTION- A (4 X 15 = 60 M)

Answer ALL Questions

1. a) (i) State and Prove Baye's Theorem.
(ii) The probability that a student passes a Physics test is $\frac{2}{3}$ and the probability that he passes both a Physics test and an English test is $\frac{14}{45}$. The probability that he passes at least one test is $\frac{4}{5}$. What is the probability that he passes the English test?
(Or)
b) Given that $f(x) = K/2x$, is a probability distribution for random variable X that can take on the values $x = 0, 1, 2, 3$ and 4.
i) Find K ii) Mean, Variance and Standard Deviation.
2. a) Fit a Poisson Distribution to the following data:

Number of mistakes per Page	:	0	1	2	3	4	Total
Number of Pages	:	109	65	22	3	1	200

(Or)
b) Calculate the correlation coefficient for the following heights (in inches) of fathers(X) and their sons(Y)

X	:	65	66	67	67	68	69	70	72
Y	:	67	68	65	68	72	72	69	71
3. a) Calculate the mean of random sample is an unbiased estimate of the mean of the population 3,6,9,15,27.
i) List of all possible samples of size 3 that can be taken without replacement from the finite population.
ii) Calculate the mean of each of the samples listed in (i) and assigning each sample probability of $\frac{1}{10}$. Verify that the mean of these $\bar{x}$ is equal to 12. Which is equal to the mean of the population $\bar{\mu}$ i.e., $E(\bar{x}) = \bar{\mu}$ i.e., prove that $\bar{x}$ is an unbiased estimate of $\bar{\mu}$
(Or)
b) Random sample of 400 men and 600 women were asked whether they would like to have a flyover near their residence 200 men and 325 women were in favour of the proposal. Test the Hypothesis that proportion of men and women in favour of the proposal are same at 5% level.
4. a) A random sample of size 64 is taken from a normal population with $\mu = 51.4$ and $\sigma = 68$.
What is the probability that the mean of the sample will a) exceed 52.9 b) fall between 50.5 and 52.3 c) be less than 50.6.

(Or)

b) Random A bank plans to open a single server drive-in banking facility at a certain centre. It is estimated that 20 customers will arrive each hour on average. If on average it requires 2 minutes to process a customer's transaction, determine.

i) The proportion of time that the system will be idle.

ii) On the average, how long a customer will have to wait before reaching the server.

iii) The fraction of customers who will have to wait.

SECTION –B (3 X 5 = 15 M)

Answer any Three of the following

5. a) Two cards are selected at random from 10 cards numbered 1 to 10. Find the probability that the sum is even if

i) The two cards are drawn together.

ii) The two cards drawn one after other with replacement.

b) Write chief characteristics of the normal distribution.

c) Write a brief note on types of errors.

d) A random sample of 500 apples was taken from a large consignment and 60 were found to be bad. Obtain the 98% confidence limits for the percentage of bad apples in the consignment.

e) Explain the characteristics of a queuing model.

f) Properties of Binomial Distribution.

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

I MCA I -Semester

19MCAT12 MANAGEMENT ACCOUNTANCY

MODEL QUESTION PAPER

Time: 3 Hrs

Max Marks: 75

SECTION- A(4 X 15 = 60 M)

Answer ALL Questions

- 1.a) Define Accounting Process? Explain various Branches of Accounting. [15]
(OR)
b) Give detailed proforma for Trading A/C, P&L A/C and Balance Sheet. [15]
2. a) What do you mean by financial statement analysis? Explain the importance of Ratio analysis in analyzing the financial strength of an organization? [15]
(OR)
b) Distinguish between Funds flow and cash flow analysis [15]
3. a) Explain the nature and importance of budgets and budgetary control in planning and coordinating the functional activities of an organization? [15]
(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 [15]
4. a) What are the various types of documents used for data collection in computerized accounting system? [15]
(OR)
b) Explain the importance of coding logics in computerized accounting system? [15]

SECTION – B (3 × 5 = 15 Marks)

Answer any THREE Questions

5. a) Double entry system
b) Closing entities
c) Liquidity ratios
d) Working Capital Cycle
e) Master Budget
f) Flexibility budget

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE(A), PENUGONDA
I MCA I Semester
19MCAT13 C & DATA STRUCTURES
MODEL QUESTION PAPER

Time: 3 Hrs.

Max Marks: 75

SECTION –A(4×15 =60 M)

Answer ALL Questions

1. a) Explain input and output statements without formatting and with formatting. Give examples.(15M)
(Or)
b) What is an array? Explain the declaration and initialization of one and two dimensional arrays with example.(15M)
2. a) Write a C program to (i) find the smallest in an array of n elements using pointer arithmetic (ii) multiplication of two matrices.
(Or)
b) Write a C program to process sequential and random access files.
3. a) Define data structure and explain Stack applications with an example (7M)
b) Write ADT operations for array implementation of a queue (8M)
(OR)
c) Define Binary Tree and explain traversals binary tree with examples (7M)
d) Explain Threaded Binary Trees and their applications with examples (8M)
4. a) Define Searching explain with an example (8M)
b) Write a C Program to implement binary search with an example (7M)
(OR)
c) Define Hashing and explain open addressing with an example (8M)
d) What is Collision? What are the different Collision resolving techniques with example (7M)

SECTION –B (3×5 =15 M)

5. **Answer any THREE Questions of the following.**
 - a) Explain Operator Precedence and Associativity.
 - b) Explain Call by value and Call by Reference.
 - c) Difference between Structure and Union.
 - d) Explain about doubly linked list
 - e) Explain the procedure for selection sort
 - f) Explain about the Dynamic Hashing

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

I MCA I Semester

19MCAT14 COMPUTER ORGANIZATION

MODEL QUESTION PAPER

Time: 3 Hrs

Max Marks: 75

SECTION- A(4 X 15 = 60 M)

Answer ALL Questions

1. a) What is Flip-Flop? Explain various types of Flip-Flop.
(Or)
b) Write about Decoder and Multiplexers and also Construct 8 to 1 Line multiplexers
2. a) Explain Data types, Complements and fixed –point representation.
(Or)
b) Draw and Explain 8085 microprocessor Architecture.
3. a) Describe the mechanism of an instruction cycle and memory reference instructions. (Or)
b) Explain instruction formats and addressing modes
4. a) Write about Asynchronous data transfer methods and Explain DMA transfer with block diagram.
(Or)
b) What is the difference between main memory and Auxiliary memory and Explain the mapping process of Cache memory.

SECTION – B (3 X 5M = 15 M)

Answer any THREE of the following

5. a) Logic Gates
b) Floating point representation
c) Timing and Control
d) Stack Organization
e) I/O Interface
f) Virtual memory

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

**I MCA I Semester
19MCAT15 OPERATING SYSTEMS
MODEL QUESTION PAPER**

Time: 3 Hrs

Max Marks: 75

SECTION- A(4 X 15 = 60 M)

Answer ALL Questions

1. Write short note on (5*3=15)
a) i) Mainframe Systems ii) Multiprocessor Systems iii) Distributed Systems
iv) Real Time Systems v) Functions of OS
(OR)
b) i) Write short notes on System calls.
ii) Explain System Structure. [8+7]
2. a) i) Explain Interprocess Communications.
ii) Write short notes on communication in Client-Server Systems. [9+6]
(OR)
b) Compare and Construct preemptive and non-preemptive scheduling algorithms.
3. a) Write a short notes on Demand Paging and Segmentation.
(OR)
b) i) Explain various Page Replacement Algorithms.
ii) Write a short notes on Disk Management and Disk Scheduling. [8+7]
4. a) Describe protections concepts and mechanisms provided by an operating system.
(OR)
b) Explain OS Concepts with respect to LINUX.

SECTION – B (3X5=15 Marks)

Answer any Three Questions

5. a) Threads
b) Dining Philosophers Problem
c) Paging
d) File Operations
e) Process
f) Methods for Handling Deadlocks.

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

**I MCA II Semester
19MCAT21 Discrete Mathematical Structures
MODEL QUESTION PAPER**

Time:3 hrs.

Max.Marks: 75

SECTION- A (4 X 15 = 60 M)

Answer ALL Questions

- 1(a) Show that $p \rightarrow q$ and $\neg q \rightarrow \neg p$ are logically equivalent. (7M)
(b) Show that the relation $\leq$ (less than or equal to) defined on the set of positive integers Z^+ is a partial order relation. (8M)

(or)

- (c) S.T $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \Rightarrow R, P \Rightarrow M$ and $\neg M$. (7M)
(d) If R be a relation in the set of integers z defined by $R = \{(x,y) : x \in z, y \in z, (x-y) \text{ is divisible by } 6\}$. (8M)

- 2(a) Solve the recurrence relation $a_n = a_{n-1} + 2, n \geq 2$ subject to initial condition $a_1 = 3$ (7M)
(b) How many ways are there to assign five different jobs to four different employees if every employee is assigned at least one job? (8M)

(or)

- (c) Applying pigeon hole principle show that of any 14 integers are selected from the set

$S = \{1, 2, 3, \dots, 25\}$ there are at least two whose sum is 26. Also write a statement that generalizes this result. (7M)

- (d) In a class of 25 students, 12 have taken mathematics. 8 have taken mathematics 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) If $G = (V, E)$ be a directed graph with e edges, then $\sum_{v \in V} \deg_{G^+}(v) = \sum_{v \in V} \deg_{G^-}(v) = e$ (7M)

- (b) Show that C_6 is a bipartite graph. (8M)

(or)

- (c) Show that the complete graph K_n has a Hamiltonian cycle. (7M)

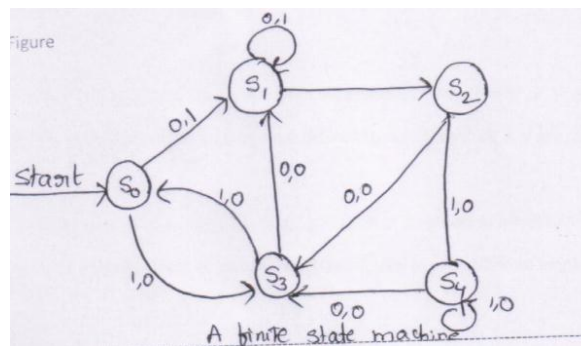
- (d) Prove that a tree with n vertices has $n-1$ edges. (8M)

4. (a) Find the sum of products expansion for the function $F(x,y,z)=(x+y)\bar{z}$ (7)

(b) Construct circuits that produce the following outputs (i) $(x+y)\bar{x}$ (ii) $\bar{x}(y+\bar{z})$ (8)
(or)

(c) Show that distributive law $x(y+z)=xy+xz$ is valid (7)

(d) Construct the state table for the finite state machine with the state diagram shown in the following Figure (8)



SECTION-B (3 * 5 = 15 M)

5. Answer any Three Questions of the following

a. Construct the truth table for $p \wedge (\sim q \vee q)$

b. Prove $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

c. State and prove Hand shaking theorem

d. Define Hamilton circuit Hamiltonian graph give examples to each

e. Find the duals of $(y+0)$ and $\bar{x}.1+(\bar{y}+z)$

f. Write the following in symbolic form

Every person is precious.

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

I MCA II Semester

19MCAT22 Information Systems and Organizational Behavior

MODEL QUESTION PAPER

Time:3 hrs.

Max.Marks: 75

SECTION-A

Answer All Questions (4 X 15 =60)

1. (a) "Organization Structure refers to be differentiation and integration of activities and authority, roles, and relationships." Explain.
(or)
(b) What are the essential features of a good organization structure?
2. (a) Critically examine Herzberg's theory of Motivation. Make a comparison between Theories of Herzberg and Maslow. Which of these theories do you prefer in Indian context? Give reasons.
(or)
(b) What are the different barriers of communication? What steps can be taken to overcome these barriers?
3. (a) What is meant by Organization Conflict? Explain its process.
(or)
(b) Explain determinants of Organization Conflict.
4. (a) What are the characteristics and functions of MIS?
(or)
(b) What are the different types of computer based information system used in different functional areas of business by organizations?

SECTION-B

Answer any three Questions (3 X 5 =15)

5. (a) Matrix Organization Chart
(b) Management vs Leadership
(c) Formal Groups vs Informal Groups
(d) Conflict Management
(e) Information System and its Contribution to TQM.
(f) Theory Y

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

I MCA II Semester

19MCAT23 Object Oriented Programming through JAVA

MODEL QUESTION PAPER

Time:3 hrs.

Max.Marks: 75

SECTION-A

Answer All Questions (4 X 15 =60)

1. a) Explain the basic concepts of OOP. (10M)
b) Explain about the command line arguments.(5M)
(Or)
c) Write about the Java Program Structure. (8M)
d) Write about the data types in Java. (7M)
2. a) Explain about the Decision Making and Branching Statements. (10M)
b) Write a Java program to check the given number is a prime or not.(5M)
(Or)
c) Explain the classes, objects and methods in Java.(8M)
d) Explain about the Constructors.(7M)
3. a) Explain about the interfaces with an example program.(8M)
b) Write about the wrapper classes.(7M)
(Or)
c) Explain multi threading concept of Java with suitable examples.(8M)
d) Describe exception handling in Java with examples.(7M)
4. a) Write about the applets and applet life cycle.(8M)
b) Write about the packages.(7M)
(Or)
c) Explain how I/O files are created and operated in Java.(15M)

SECTION - B

Answer any THREE questions (3 x 5 = 15)

5. a) Symbolic Constants
b) Overriding methods
c) Vectors
d) Applications of applets
e) Visibility control
f) Thread Priority.

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

I MCA II Semester

19MCAT24 Formal Languages and Automata Theory

MODEL QUESTION PAPER

Time:3 hrs.

Max.Marks: 75

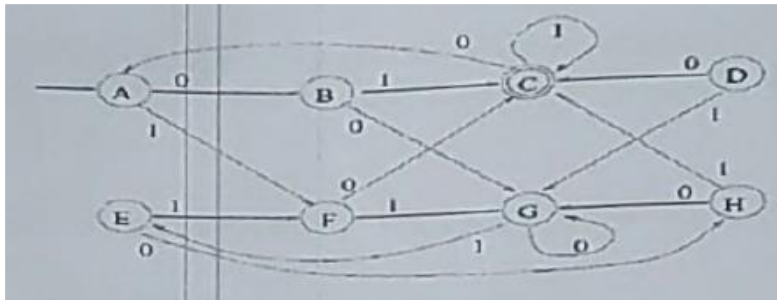
SECTION - A

Answer ALL Questions (4 x 15 =60)

1. a) Let r be a regular expression. Then there exists some NFA with ϵ -transitions that accepts $L(r)$?

(or)

- b) What is the use of Membership algorithms and construct the minimum state automaton equivalent to the transition diagram given below



2. a) State and prove pumping lemma for CFL's 8 M

- b) Explain any five closure properties of Regular Sets? 7 M

(or)

- c) Construct a PDA to accept $L = \{WW^R / W \text{ in } (0+1)^*\}$?

3. a) Construct a TM to accept $L = \{a^n b^n c^n / n \geq 1\}$?

(or)

- b) Briefly discuss combining Turing Machines ? 8 M

- c) Discuss the halting problem of Turing Machine? 7 M

4. a) Syntax of Predicate Calculus ? 7 M

- b) Explain Truth Assignment ? 8 M

(or)

- c) Explain Validity and Satisfiability?

SECTION - B

Answer any THREE questions (3 x 5 = 15)

5. a) What is transition system ?
b) What are the differences between DFA and Non-DFA?
c) Briefly discuss simplification of CFL's ?
d) Define Turing Machine ?
e) Explain Normal Forms ?
f) Discuss about PDA.

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

I MCA II Semester

19MCAT25 Web Technologies

MODEL QUESTION PAPER

Time:3 hrs.

Max.Marks: 75

SECTION - A

Answer ALL Questions (4 x 15 =60)

1. a) Explain about Basic Structure of HTML Document (7M)
b) Explain Tables & Layouts IN HTML (8M)
(or)
c) Write A program to illustrate Dynamic HTML with Java Script (15M)
2. a) Explain about Document Object Model with Example (7M)
b) Explain with an example presenting XML document (8M)
(or)
c) Explain briefly about different types of JDBC drivers (15M)
3. a) What is PHP ? How to Run and Compiling a PHP Program? (7M)
b) Explain How to Embedding PHP with in HTML with an Example? (8M)
(or)
c) Explain about Operators and Loops in PHP (15M)
4. a) How to Replacing Text with in Strings (5M)
b) Write a PHP Program to sort elements in a given Array (10M)
(or)
c) Explain about Variable Functions and Write a PHP Program to Find Factorial of a Number Using Recursive Function (7+8M)

SECTION - B

Answer any THREE questions (5 x 3 = 15)

5. a) Cascading Style sheets
b) HTML Frames
c) Statement objects
d)Namespaces
e) Nowdoc Syntax
f) Foreach Statement

SVKP & Dr K S RAJU ARTS & SCIENCE COLLEGE
(Autonomous)
Department of Computer Science(MCA Program)

Model Question Papers II & III Year

(Three Years Course - AB 2019-20)

MCA, SEMESTER –III

S.No.	Course	Paper title	Paper Code	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	Paper-I	Operations Research	19MCAT31	100	25	75	4	4
2	Paper-II	Internet of Things	19MCAT32	100	25	75	4	4
3	Paper-III	Computer Networks	19MCAT33	100	25	75	4	4
4	Paper-IV	Artificial Intelligence	19MCAT34	100	25	75	4	4
5	Paper-V	Database Management Systems	19MCAT35	100	25	75	4	4
6	Lab Practical-I	Computer Networks Lab	19MCAP36	100	50	50	3	2
7	Lab Practical-II	Database Management Systems Lab	19MCAP37	100	50	50	3	2
Total				700	225	475	26	24

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)
DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA III Semester
19MCAT31 Operations Research
Model Question Paper

Time : 3 Hours

Max. Marks:75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) Explain simplex algorithm to find optimum solution for a given LPP 7M
b) Use simplex method to solve the following LPP. 8M
Maximize $Z=5x_1+4x_2$
Subject the constraints
 $4x_1+5x_2 \leq 10$
 $3x_1+2x_2 \leq 9$
 $8x_1+3x_2 \leq 12, x_1 \geq 0, x_2 \geq 0$
- Or**
- c) Use two-phase simplex method to 15M
Maximize $Z=3x_1+2x_2$
Subject to the constraints
 $2x_1+x_2 \leq 2$
 $3x_1+4x_2 \geq 12$
 $x_1 \geq 0, x_2 \geq 0.$
2. a) Explain dual simplex Algorithm 8M
b) Use dual simplex method to solve the following LPP. 7M
Maximize $Z=2x_1+3x_2$
Subject to the constraints
 $2x_1-x_2-x_3 \geq 3$
 $x_1-x_2+x_3 \geq 2, x_1, x_2, x_3 \geq 0$
- Or**
- c) Solve the following transportation problem whose unit cost matrix, supply and demand are given below. 15M

	D1	D2	D3	D4	D5	Supply
1	7	7	10	5	11	45
2	4	3	8	6	13	90
3	9	8	6	7	5	95
4	12	13	10	6	3	75
5	5	4	5	6	12	105
Demand	20	80	50	75	85	

3. a) A project is composed of eleven activities, the time estimates for which are given below

15M

Activity	Optimistic Time (Days)	Pessimistic Time (Days)	Most Likely Time (Days)
1-3	10	60	20
1-4	5	15	10
2-5	50	110	65
2-6	30	50	40
3-6	50	90	55
3-7	1	9	5
4-7	40	68	48
5-8	5	15	10
6-8	20	52	27
7-8	30	20	40

- Draw the network diagram for the project
- Calculate slacks for each mode.
- Determined the critical path
- What is the probability of completing the project in 125 days?

Or

- b) Find the optimum integer solution to the following linear programming Problem

15M

Maximize $Z=5x_1+8x_2$

Subject to $x_1+2x_2 \leq 8$

$4x_1+x_2 \leq 10$

$x_1, x_2 \geq 0$ and integers.

4. a) Solve the game where pay off matrix is given below, using dominance

15M

Player B				
	I	II	III	IV
I	18	4	6	4
II	6	2	13	7
III	11	5	17	3
IV	7	6	12	2

Or

- b) Explain static and dynamic EOQ models.

15M

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5.

- Vogel's approximation.
- When do you get degeneracy in transportation problem?
- What is the difference between regular simplex method and dual simplex method.
- Write mathematical formulation of assignment problem
- What are the advantages of networks?
- Explain recursive nature of dynamic programming.

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)
DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA III Semester
19MCAT32 Internet Of Things
Model Question Paper

Time : 3 Hours

Max. Marks:75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) What is the IoT? Explain Design guidelines for IoT (15M)
Or
b) Explain in detail application of Internet of Things in Smart Cities (15M)
2. a) Explain M2M. Distinguish between IoT and M2M (8M)
b) Explain SDN and NFV for IoT (7M)
Or
c) Explain IoT System Management with NETCONF-YANG (8M)
d) Explain limitations of SNMP (7M)
3. a) Explain Design Methodology for IoT (15M)
Or
b) Explain Logical Design of IoT using Python. Explain various python packages used for IoT (15M)
4. a) What is Raspberry Pi. Explain Raspberry Pi Board and various interfaces in Raspberry pi. (15M)
Or
b) What is Cloud? Explain various Cloud Storage Models using in IoT (15M)

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a) Explain Wireless Sensor Networks
b) Explain IoT in Environment
c) Explain Need for IoT Systems Management
d) Explain various data types used in Python
e) Explain basic building blocks of IoT Device
f) Explain Amazon Web Services for IoT

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)

DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA III Semester

19MCAT33 Computer Networks

Model Question Paper

Time : 3 Hours

Max. Marks:75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) With a neat block diagram explain the TCP/IP reference model. List out the limitations of the model. [15]
(OR)
(b) What are the functions of the physical layer?
(c) Give the physical description, characteristics, and uses of all the guide transmission media. [5+10]
- 2 (a) Explain Sliding Window Protocol
(b) Differentiate Error detection and Correction Codes [8+7]
(OR)
(c) Explain Link State Routing Protocol
(d) What are the methods of congestion control in datagram subnets [10+5]
- 3 (a) what is TCP protocol? How is connection management done by TCP?
(b) Explain how TCP controls congestion [8+7]
(OR)
(c) Explain SMTP and MIME [15]
- 4(a) Compare the different network devices [15]
(OR)
(b) Write brief notes on Mobile Adhoc Networks and Sensor networks [15]

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

- 5.
- (a) ATM Reference Model
 - (b) Explain Frequency Division Multiplexing
 - (c) Give the format of IPv4 header
 - (d) IPv4 Address Classes
 - (e) Difference between TCP and UDP
 - (f) Short Notes on Firewalls

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)
DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)
MCA III Semester
19MCAT34 Artificial Intelligence and Expert Systems
Model Question Paper

Time : 3 Hours

Max. Marks : 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) Describe any one informed search strategy and uninformed search strategy.
(OR)
b) Explain four basic kinds of agents that underlie almost all intelligent systems.
2. a) Explain how optimal strategies lead to optimal decisions in games.
(OR)
b) Describe resolution and unification
3. a) Explain different approaches to uncertain reasoning. (OR)
b) Describe multi attribute utility functions
4. a) Explain the stages in the development of an expert system.
(OR)
b) Briefly explain the concept of neural networks.

SECTION – B (3*5=15 Marks)

Answer anyTHREE Questions

5.
 - a) Define AI. What is Turing Test?
 - b) Specify the basic components of a problem.
 - c) Give the BNF of sentences in propositional logic.
 - d) Axioms of probability.
 - e) Applications of expert systems
 - f) Frames

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)

DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA III Semester

19MCAT35 DATABASE MANAGEMENT SYSTEMS

Model Question Paper

Time : 3 Hours

Max. Marks: 75

SECTION – A (4x15=60 Marks)

Answer ALL Questions

1. a) Write a brief note on advantages and applications of DBMS [8M]
b) Briefly explain about Three-Schema Architecture with neat diagram [7M]

Or

- c.) Briefly discuss about Database System Environment with neat diagram [15M]

2. a) Explain in detail about various key constraints used in database system with examples [10M]

- b) Explain about Relational Algebra Set Operations with examples [5M]

Or

- c) Explain in detail about Tuple and Domain Relational Calculus with examples [15M]

3. a) What is Normalization? Briefly explain the types of normal forms with an example [15M]

Or

- b) Explain how a dynamic multi level indexes can be created using B Trees and B+ Trees with example. [15M]

4. a) What is Serializability? Briefly explain the different types of Serializability [15M]

Or

- b) Briefly explain the following Concurrency Control Techniques

- i) Two Phase Locking Protocol [8M]

- ii) Validation Concurrency Control [7M]

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a) Define DBMS, Schema, Instance. What is weak entity? Explain with example

- b) What is Data Independence? Specify the classification

- c)What is View in SQL? Create a view and perform DML operations on it

- d)Give a brief note on Buffering Blocks

- e)What is Transaction? Discuss Characteristics of Transaction

- f)Give a brief note on Shadow Paging technique.

MCA, SEMESTER –IV

S.No.	Course	Paper title	Paper Code	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	Paper-I	Information Security and Cryptography	19MCAT41	100	25	75	4	4
2	Paper-II	Distributed Systems	19MCAT42	100	25	75	4	4
3	Paper-III	Data Mining Concepts and Techniques	19MCAT43	100	25	75	4	4
4	Paper-IV	Object Oriented Software Engineering	19MCAT44	100	25	75	4	4
5	Paper-V	Elective-I 1. Embedded Systems 2. Design and Analysis of Algorithms 3. Image Processing	19MCAT45	100	25	75	4	4
6	Lab Practical-I	Data Mining Concepts and Techniques Lab	19MCAP46	100	50	50	3	2
7	Lab Practical-II	Object Oriented Analysis and Design Lab	19MCAP47	100	50	50	3	2
Total				700	225	475	26	24

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MCA IV Semester

19MCAT41 Information Security and Cryptography
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)
Answer ALL Questions

1. a) Explain Principles of Security 7M
b) Discuss Substitution and Transportation techniques? 8M

Or

 - c) What is Modulo Arithmetic and discuss its properties? 8M - 3. What is Totient Function and explain how to calculate Totient Function with an example 7M
-
2. a) Show that DES decryption is the inverse of DES encryption? 8M
b) Discuss different block cipher modes of operation? 7M

Or

 - c) Explain RSA algorithm with an example? 8M - d) Explain how to generate digital signatures? 7M
-
3. a) What is authentication and discuss different authentication mechanisms? 7M
b) Explain SHA1? 8M

Or

 - c) What is Virus? And discuss different types of Viruses? 5M - d) Write short notes on Intruders and Trusted Systems? 10M
-
4. a) Briefly explain SSL protocol? 7M
b) Explain SET in detail? 8M

Or

 - c) Explain about IP Security architecture? 8M - d) What is Firewall and discuss different types of Firewalls? 7M

SECTION – B (3*5=15 Marks)
Answer any THREE Questions

5.
 - 1 Explain any five Security attacks?
 - 2 What is Key and what are different types of keys?
 - 3 Briefly discuss Differential cryptanalysis?
 - 4 Define Prime number and explain relatively prime numbers with an example?
 - 5 Differentiate between Symmetric and Asymmetric key cryptography?
 - 6 Explain SHTTP?

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MCA IV Semester
19MCAT42 Distributed Systems
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) What are Distributed Systems? Give some examples. Explain the advantages and limitations of distributed systems. **15M**

Or

- b) Explain the various issues to be addressed while designing a distributed system **15M**
- 2. a) Explain and compare the mutual exclusion algorithms **15M**

Or

- b) What are physical and logical clocks? Explain the various clock synchronization algorithms. **15M**
- 3. a) Compare the different system models **7M**
- b) What are threads? Explain the design issues for thread packages **8M**

Or

- c) Explain the different processor allocation algorithms **15M**
- 4. a) Explain Strict Consistency, Sequential Consistency and Causal Consistency with appropriate examples. **15M**

Or

- b) Explain cache consistency protocols for bus based multiprocessors with shared memory **8M**
- c) How can sequential consistency be achieved in replicated pages in page based distributed shared memory? **7M**

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. **Write a Short note on**
 - a) Differentiate tightly coupled and loosely coupled hardware.
 - b) What are the essential properties of transactions?
 - c) Explain Ring Election Algorithm.
 - d) Write briefly about file service interface.
 - e) What are faults? Explain the types of component faults and processor faults
 - f) Compare the various shared memory systems.

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MCA IV Semester
19MCAT43 Data Mining Concepts and Techniques
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) Explain with a neat diagram the three-tier architecture of a Data Warehouse **7M**
b) Explain the OLAP operations in a Multidimensional data. **8M**

Or

c) Why do we pre-process data? Explain different techniques in data cleaning, integration and transformation **15M**
2. a) 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? **10M**
b) Mention different issues in Data Mining. **5M**

Or

c) Explain in detail how the data is measured differently in statistical descriptions **8M**
d) Where can data mining be applied? Explain different domains of applications **7M**
3. a) Explain FP-Growth Algorithm with an example. **8M**
b) Explain AOI Algorithm. **7M**

Or

c) Explain Apriori property and explain the algorithm associated with it **8M**
d) How to generate Closed and Max patterns **7M**
4. a) What is the difference between classification and Prediction? How a decision tree is constructed **10M**
b) Explain Support Vector Machines concept **5M**

Or

c) Explain Bayesian Classification Methods. How Classification by back propagation is obtained **7M**
d) Explain k-means Clustering and compare that with k-medoids algorithm **8M**

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. **Write a Short note on**
 - a) DBSCAN Algorithm
 - b) Tree Pruning
 - c) Concept Description.
 - d) Multilevel Association Rules
 - e) Data Visualization
 - f) Similarity and Dissimilarity of data

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DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA IV Semester
19MCAT44 Object Oriented Software Engineering
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

- | | |
|--|------------|
| 1. a) What is software engineering? Explain software engineering activities | 15M |
| Or | |
| b) What is requirement engineering? Explain requirements engineering activities | 15M |
| 2. a) Discuss how usability principles play a significant role in user interface design | 15M |
| Or | |
| b) Explain static and dynamic elements of UML. | 15M |
| 3. a) What is software architecture? Explain architectural patterns with examples. | 15M |
| Or | |
| b) What is the role of patterns in software engineering? Explain any four patterns | 15M |
| 4. a) Explain the types of defects that occur in the cases of ordinary algorithms, numerical algorithms and timing and co-ordination | 15M |
| Or | |
| b) Explain RUP | 15M |

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. **Write a Short note on**
- a) Software quality
 - b) Reusability in software engineering.
 - c) Purpose of use case diagram.
 - d) Specialization and generalization.
 - e) Design principles.
 - f) Black box testing.

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MCA IV Semester

19MCAT45 Elective-I:1. Embedded Systems

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Draw and explain the typical Embedded system architecture? [8M]
b) Illustrate an application-specific Embedded system with suitable example? [7M]
(or)
c) What are the various serial communication devices used in an Embedded Hardware? Explain any one of them? [8M]
d) Discuss about Real time clock with respect to an Embedded Hardware? [7M]
2. a) Explain any one of Embedded firmware design approaches in detail? [8M]
b) Tabulate the concepts of compiler and cross compiler relevant to an Embedded Firmware? [7M]
(or)
c) Discuss about Multiprocessing and Multitasking techniques used in RTOS? [8M]
d) Briefly explain (i) Task scheduling (ii) Hardware software trade-offs [7M]
3. a) Draw and explain the integrated embedded system development environment. [8M]
b) Write notes on Embedded software development-process? [7M]
(or)
c) Write short notes on the following [15M]
i) Translation Tools
ii) Debugging Tools
4. a) What is Digital Signal Processor? Explain the role of DSP in embedded system design. [8M]
b) Explain the different characteristics of embedded systems in detail? [7M]
(or)
c) Explain the role of Watchdog timer in embedded system [8M]
d) Compare the operation of ZigBee and Wi-Fi networks [7M]

Section-B (5 X 3 =15 Marks)

5. Write a Short Note on any FIVE of the following

- a) What is operational quality attribute?
- b) What is the operation of transistor based relay driver circuit ?
- c) What is the difference between C and Embedded C ?
- d) What is process life cycle?
- e) What are the advantages of simulator base debugging?
- f) What is a target system? How does the target system differ from the final embedded system?

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MCA IV Semester
19MCAT45 Elective-I:2. Design and Analysis of Algorithms
Model Question Paper

Time : 3 Hours

Max. Marks : 75

SECTION – A (4X15=60 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) Explain Floyd's algorithm for all-pairs shortest path problem with an
example. (OR)
b) Explain Greedy method .Discuss Krushkal's algorithm for minimum spanning tree.
4. a) Explain NP-Complete and NP-Hard problems.
(OR)
b) Explain n-queen problem using backtracking technique.

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a). Analysis of recursive algorithm.
b) Strassen's matrix multiplication.
c) Binary search algorithm.
d) Horner's rule.
e) Dijkstra's algorithm.
f) Decision tree.

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MCA IV Semester

19MCAT45 Elective-I: 3. Image Processing

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Explain the elements of Digital Image Processing System with a neat diagram (15M)
Or
b) Explain terms: Neighbours of a Pixel , Adjacency, Connectivity, Regions, and Boundaries , Distance measures , Image Operations on a Pixel Basis (15M)
2. a) Define and explain low pass filters and high pass filters in brief (7M)
b) Define and edge. Explain various edge enhancement filters (8M)
Or
c) Discuss histogram techniques for Image enhancement: Histogram specification (Matching., Histogram Equalization , Local enhancement. (15M)
3. a) Explain Lossy compression and Lossy predictive coding (15M)
Or
b) Explain the Morphological Algorithms: Boundary Extraction, Region Filling (15M)
4. a) Distinguish Global Processing via the Hough Transform and via the Graph-Theoretic Techniques. (15M)
Or
b) What is Thresholding? Explain about Global Thresholding (15M)

Section-B (3*5 =15 Marks)

5. **Write a Short Note on any THREE of the following**
 - a) How do you acquire an image? Explain in detail
 - b) What is Image Sampling and Quantization?
 - c) Compare one dimension and two dimension DFT
 - d) Explain about the Dilation and Erosion
 - e) Draw the relevant diagram for source encoder and source decoder
 - f) Explain the Detection of Discontinuities: Point Detection, Line Detection, Edge Detection

MCA, SEMESTER –V

S.No.	Course	Paper title	Paper Code	Total Marks	Mid Sem Exam	Sem End Exam	Teaching Hours	Credits
1	Paper-I	Big Data Analytics	19MCAT51	100	25	75	4	4
2	Paper-II	Cyber Security and Forensics	19MCAT52	100	25	75	4	4
3	Paper-III	Elective II 1. Blockchain Technology 2. Foundations of Data Science 3. Human-Computer Interaction	19MCAT53	100	25	75	4	4
4	Paper-IV	Elective-III 1.Python Programming 2.Pearl Programming 3.PHP programming	19MCAT54	100	25	75	4	4
5	Paper-V	Elective-IV 1. Machine Learning 2. Cloud Computing 3. Robotics	19MCAT55	100	25	75	4	4
6	Lab Practical-I	Big Data Analytics Lab	19MCAP56	100	50	50	3	2
7	Lab Practical-II	Mini Project*	19MCAP57	100	50	50	3	2
Total				700	225	475	26	24

* Mini Project should be done with Elective-III

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MCA V Semester

19MCAT51 Big Data Analytics

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

- d) a) Define Big Data. What are the characteristics of Big Data. Explain each character with suitable real time applications (15M)
- Or**
2. Compare data in a Warehouse and Data in Hadoop. Discuss similarities and dissimilarities (15M)
2. a) Explain Map Reduce concept and all building blocks of Hadoop (15M)
- Or**
2. Explain the concepts of HDFS. Also explain how command line interface in Java works in HDFS (15M)
- c) a) Write Matrix multiplication program with Map Reduce concept. How to construct Basic template of a Map Reduce Program (15M)
- Or**
- b) Write word count program with Map Reduce concept. Explain Bloom Filters (15M)
4. a) Explain Friends-of-Friends Algorithm in finding friends in a Social Network. (15M)
- Or**
- b) Explain PageRank Algorithm. (15M)

Section-B (3*5=15 Marks)

5. **Write a Short Note on any THREE of the following**

- a) Explain the concept of wrapper classes in Java
- b) Explain Serializability
- c) Compare sql databases and Hadoop
- d) What is Hadoop Archives. Explain
- e) Explain anatomy of a MapReduce Program
- f) What is Streaming In Hadoop

MCA V Semester
19MCAT52 Cyber Security & Forensics
Model Question Paper

Max. Marks: 75

1. **a) Distinguish computer forensics and other related disciplines? (8M)**
 b) Explain how to establishing company policies? (7M)
 Or
 c) Explain an overview of a computer crime? (8M)
 d) Explain how to analysing your digital evidence? (7M)
2. **a) Discuss different Storage Formats for Digital Evidence? (7M)**
 b) Explain how to identify the nature of the case? (8M)
 Or
 c) Explain seizing digital evidence at the scene? (15M)
3. **a) Explain how to Exploring Microsoft File Structures? (15M)**
 Or
 b) Discuss different Computer Forensics Software Tools? (15M)
4. **a) Addressing Data-Hiding Techniques? (8M)**
 b) What are the Specialized E-mail Forensics Tools? (7M)
 Or
 c) What are Acquisition Procedures for Cell Phones and Mobile Devices?(15M)

5. **Write a Short Note on any THREE of the following**

- a) What is computer forensics?
- b) Briefly explain how to develop computer forensics resources?
- c) Explain E-mail abuse investigations.
- d) Briefly discuss Windows validation methods?
- e) Explain processing and handling digital evidence?
- f) What are the different disk partitions?

DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA V Semester

19MCAT53 Elective-II:1. Block chain Technology

Model Question Paper

Time: 3 Hours**Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Explain linking blocks using SHA-256 Algorithm. (8M)
 b) Explain digital signatures in blockchain? (7M)
 Or
 c) Explain blockchain types with examples? (8M)
 d) Explain blockchain functionalities with examples? (7M)
2. a) Explain blockchain design principles with examples? (15M)
 Or
 b) Explain security and privacy in blockchain with examples? (15M)
3. a) Explain pure state based consensus with examples? (15M)
 Or
 b) Explain any three consensus algorithms with examples? (15M)
4. a) Explain blockchain optimization techniques with examples? (8M)
 Or
 b) Explain blockchain enhancement techniques with examples? (15M)

Section-B (3*5 =15 Marks)

5. **Write a Short Note on any THREE of the following**
- a) Differentiate between blockchain and databases.
 - b) Explain hashing on Block chain.
 - c) Explain distributed ledgers on Blockchain.
 - d) Explain public and private ledgers on blockchain.
 - e) Explain delegated proof of state in blockchain.
 - f) Explain Attacks on Blockchain.

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DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA V Semester

19MCAT53 Elective-II:2. Foundation of Data Science

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

- | | | |
|----|---|-------|
| 1. | a) Explain concepts of relational database in data science with examples. | (15M) |
| | Or | |
| | d) Explain the concept of managing data in data science with examples. | (15M) |
| 2. | a) Explain modeling methods in data science with examples? | (15M) |
| | Or | |
| | b) Explain linear and logistic regression in data science with examples? | (15M) |
| 3. | a) Explain R language operations with examples? | (15M) |
| | Or | |
| | b) Explain probability distribution in R language with examples? | (15M) |
| 4. | a) Explain the concept of documentation and deployment in data science with examples? | (8M) |
| | Or | |
| | b) Explain the graphical analysis in data science with examples? | (15M) |

Section-B (3*5 =15 Marks)

- 5. Write a Short Note on any THREE of the following**
- a. Explain stages in data science with examples.
 - b. Explain spotting problems in data science
 - c. Explain machine learning tasks on modeling.
 - d. Explain types of data items in R Language
 - e. Explain Normal distribution in Data Science
 - f. Explain Graphics parameters in R language.

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MCA V Semester

19MCAT53 Elective-II:3. Human Computer Interaction

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) What is Heuristic Evaluation? Why is it used? Outline the steps involved for expert review. [8M]
b) Discuss the guidelines for Ethnographic observation. [7M]
(or)
c) Explain the importance of response time display rate in menu designing. [8M]
d) Compare and contrast between the Linear menus and Tree structured menus with examples. [7M]
2. a) Discuss the challenges and issues in adopting Speech recognition technology. [8M]
b) Explain the various display technologies applicable for small and large displays. [7M]
(or)
c) Discuss the factors that influence the acceptable response time. [8M]
d) Explain the importance and impact of using colors in the design of error and warning messages [7M]
3. a) Explain the advantages of online documentation and also discuss the important Features that can help accessing the online documentation in a better way. [8M]
b) Discuss the designer concerns and user-desired qualities for shaping the content of documentation. [7M]
(or)
c) What do you mean by Multimedia document? Discuss various challenges involved in searching a multimedia document. [8M]
d) Discuss the process of data type by task taxonomy for information visualization[7M]
4. a) Explain how organizational design supports usability. [8M]
b) Discuss the concerns and potential barriers for Social impact statement of early design review. [7M]
(or)
c) Explain various structures of menus with neat diagrams. [8M]
d) What are small display units? What are its special characteristics? Discuss various factors that are to be considered in designing menus for small display units. [7M]

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a) Discuss the interface design goals for academicians, industrial researches and common people.
b) Describe the features of mobile device displays.
c) Why is quality of service important in the context of HCI?
d) Differentiate between paper manuals and displays.
e) What is the reference model for visualizations? Why is this model important for visualization?
f) Discuss the importance of audio menus for small display units.

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MCA V Semester

19MCAT54 Elective-III:1. Python Programming

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) What are different applications of Python? Give examples. (7M)
b) Write a Python program to convert height in feet and inches to cm. [1 feet = 12 inch and 1 inch= 2.54 cm]
(Sample input: 2 feet 7 inch Sample output: 78.74 cm) (8M)
(or)
c) List and explain different arithmetic operators supported by Python. Discuss about their precedence and associativity. (7M)
d) Write a Python program to print all prime numbers less than 256. (8M)
2. a) Write a Python program that interchanges the first and last characters of a given string. (7M)
b) Give a comparison between lists, tuples, dictionaries and sets (8M)
(or)
c) What type of parameter passing is used in Python? Justify your answer with sample programs. (8M)
d) Write a Python function that prints all factors of a given number. (7M)
3. a) Write a Python program that overloads + operator, to add two objects of a class. (8M)
b) How to create, raise and handle user defined exceptions in Python. (7M)
(or)
c) What are regular expressions? How to find whether an email id entered by user is valid or not using Python 're' module. (7M)
d) Write a Python program that creates a GUI with a textbox, Ok button and Quit button. On clicking Ok, the text entered in textbox is to be printed in Python shell; on clicking Quit, the program should terminate. (8M)
4. a) Explain creating classes in Python with examples (8M)
b) Define and Differentiate Error and exception. (7M)
(or)
c) Why testing is required? explain in detail (7M)
d) Explain the following i) Calendar module ii) Synchronizing threads (8M)

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a) What happens if a semicolon (;) is placed at the end of a Python statement?
b) What are membership operators? Give examples for usage.
c) What is a dictionary in Python?
d) Can a Python function return multiple values? If yes, how it works?
e) How to make a Python class member variable hidden from outside the class?
f) How to access dictionaries in python?

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MCA V Semester

19MCAT54 Elective-III:2. PERL Programming

Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)

Answer ALL Questions

1. a) Explain manipulation of data structures in PERL programming with examples [15M]
(or)
b) Define PERL, explain comparisons with other programming languages with examples [15M]
2. a) Explain control structures in PERL programming with examples . [15M]
(or)
b) Explain Object Oriented concept in PERL programming with examples [15M]
3. a) Explain file handling function in PERL programming with examples [15M]
(or)
b) Explain runtime evaluation and error trapping in perl programming with an example [15M]
4. a) Explain security issues in PERL programming with an example [15M]
(or)
b) Explain Administration functionalities in PERL programming with an example [15M]

SECTION – B (3*5=15 Marks)

Answer any THREE Questions

5. a) Differentiate scripts and programs in PERL programming.
- b) Explain scalar variables in PERL
- c) Explain parameter passing techniques in PERL.
- d) Explain input and output functions of perl
- e) Explain operators in perl programming.
- f) Differentiate GET vs POST in perl.

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MCA V Semester
19MCAT54 Elective-III:3. PHP Programming
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION – A (4X15=60 Marks)
Answer ALL Questions

1. a) Explain control structures in PHP programming with example [15M]
(or)
b) Explain types of Arrays in PHP programming with examples [15M]
2. a) Explain web pages in PHP programming with examples [15M]
(or)
b) Explain types of form data in PHP programming with examples [15M]
3. a) Explain accessing and updating in PHP programming with examples [15M]
(or)
b) Explain database concept in PHP programming with an example [15M]
4. a) Explain file handling functions in PHP programming with an example [15M]
(or)
b) Explain PHP mail functions with an example [15M]

SECTION – B (3*5=15 Marks)
Answer any THREE Questions

5. a) Explain data types in PHP.
- b) Explain function in PHP
- c) Explain reading data in Web pages
- d) Explain data validation in PHP
- e) Explain MySQL in PHP Database.
- f) Explain PHP mail functions.

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MCA V Semester
19MCAT55 Elective-IV:1. Machine Learning
Model Question Paper

Time: 3 Hours

Max. Marks: 75

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) What is Machine learning? Explain different perspectives and issues in machine learning
b) What are the concepts of learning as search?

Or

- c) Explain find – S algorithm with the given example. Give its application

Explain	SKY	AIR Temp.	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rain	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

- d) Explain basic decision tree algorithm (5M)

2. a) Explain basic decision tree algorithm (10M)
b) Explain how hypothesis space search is carried in decision tree learning (5M)

Or

- c) Explain Back propagation algorithm. Mention its limitations (7M)
d) Discuss a general approach for deriving confidence intervals (8M)

3. a) Discuss maximum likelihood hypothesis for predicting probabilities in Bayesian learning (7M)
b) Explain Gibbs algorithm (8M)

Or

- c) Explain k- Nearest Neighbour Learning with example (8M)
d) Write a short note on Locally Weighted Regression, Case-Based Reasoning (7M)

4. a) Explain Hypothesis space search in genetic algorithms (8M)
b) How Genetic Algorithm can be parallelized? (7M)

Or

- c) Write short notes on the following:
i. Learning First Order Rules ii. Sequential Covering Algorithms (8M)
d) Write about Genetic Programming Models of Evolution and Learning (7M)

Section-B (3*5 =15 Marks)

5. **Write a Short Note on any THREE of the following**
a) Explain designing a learning system
b) Write a short note on candidate elimination algorithm
c) Explain the Issues in decision tree learning
d) Explain about Multilayer networks
e) Briefly write about Lazy and Eager Learning
f) What is Inverted Deduction? Explain

S.V.K.P & Dr. K.S. RAJU ARTS & SCIENCE COLLEGE(A)
DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA V Semester

19MCAT55 Elective-IV:2.Cloud Computing

Model Question Paper

Time: 3 Hours**Max. Marks: 75**

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1.
 - a) Explain Cloud computing delivery models and Services. (8M)
 - b) Discuss Communication Protocols and Process Coordination in Distributed Systems. (7M)

Or

 - c) Briefly explain Cloud Computing at Microsoft Azure. (8M)
 - d) Explain Responsibility sharing between user and cloud service provider. (7M)
2.
 - a) What is the need of virtualization? Explain Full virtualization and Para virtualization. (7M)
 - b) Discuss Virtual Machine Monitors and Virtual Machines. (7M)

Or

 - c) Explain Start-Time Fair Queuing Scheduling Algorithm for Computing Clouds. (15M)
3.
 - a) Explain Network File System (NFS), Andrew File System (AFS) and Sprite Network File System (SFS) of Distributive File Systems. (8M)
 - b) Discuss Google File System. (7M)

Or

 - c) Explain the Security of Virtualization (8M)
 - d) Discuss the Xoar: Breaking the monolithic design of the TCB. (7M)
4.
 - a) How do we connect clients to cloud instances through Firewalls? (8M)
 - b) Explain the Security rules for application and transport layer protocols in EC2. (7M)

Or

 - c) How to install Hadoop on Eclipse on a Windows system (8M)
 - d) Explain the Case Study: Xen, a VMM based on para virtualization (7M)

Section-B (3*5 =15 Marks)

5. **Write a Short Note on any FIVE of the following**
- a) Challenges for Cloud Computing
 - b) The Zoo Keeper
 - c) Mechanisms for Resource Management
 - d) Locks and Chubby.
 - e) VM Security
 - f) Cloud-based simulation of a distributed trust algorithm.

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DEPARTMENT OF COMPUTER SCIENCE (M.C.A PROGRAMME)

MCA V Semester

19MCAT55 Elective-IV: 3. Robotics

Model Question Paper

Time: 3 Hours

Marks: 75

Max.

SECTION-A (4 X 15 = 60 M)

Answer ALL Questions

1. a) Define the term 'Robot'. Explain different Robot types.
[8M]
b) What is meant by a manipulator having redundant degrees of freedom and write its advantages? [7M]
(or)
c) Distinguish between servo and non-servo grippers. [8M]
d) What are the design considerations in the robot end effector for holding the object?
[7M]
2. a) Discuss the features of SCARA and cylindrical robot and also find the D-H matrix for cylindrical robot. [15M]
(or)
c) What is Jacobian work envelope? Explain in brief.[8M]
d) Find the manipulator Jacobian matrix $J(q)$ of the five axis spherical co- ordinate robot. [7M]
3. a) Explain the different types of Robot languages. [8M]
b) Discuss the software elements of robot and different teaching methods of robot. [7M]
(or)
c) Explain the applications of Robot in spot and continuous arc welding.[8M]
d) In which type of production, robots are preferred for loading and unloading function? Explain. [7M]
4. a) Name and discuss the four basic arm configurations that are used in robotic manipulators. [8M]
b) Discuss advantages and disadvantages of using robot in industry. [7M]
(or)
c) Discuss direct and inverse kinematics [8M]
d) Differentiate path planning and trajectory planning [7M]

Section-B (3*5 =15 Marks)

5. Write a Short Note on any THREE of the following

- a) What are the various applications of Robots in manufacturing industries?
- b) What is the function of gripper?
- c) What is inverse kinematics problem?
- d) What is meant by range and proximity sensor?
- e) Discuss the applications of Tactile sensors.
- f) what is dynamic modeling?