



Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

Subject Code: R16MCA201

MCA - II Semester Regular and Supplementary Examinations, June-2019.
DATABASE MANAGEMENT SYSTEMS

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) What are the key functionalities of DBMS?
- (b) Differentiate 'Var Char' and 'Var Char2' data types.
- (c) Define First and Second normal forms.
- (d) What is the use of Check Points ?
- (e) Compare Primary Index and Secondary Index?
- (f) Write the use of extendable hashing.

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) Discuss the advantages of DBMS as compared to traditional file systems. (6 M)
- (b) Write ER diagram for Students' Attendance Maintenance software package. (6 M)
3. (a) Discuss various kinds of JOIN operations with suitable examples. (6 M)
- (b) What is the use of correlated nested queries of SQL? Explain with an example. (6 M)
4. (a) What do you mean by Functional Dependencies ? Explain. (6 M)
- (b) Discuss Multi-valued dependencies with the help of suitable Normal Form. (6 M)
5. (a) Write short note on Lock management in controlling concurrency. (6 M)
- (b) Explain ARIES recovery mechanism. In what order transactions must be undone and redone?
What is the need of maintaining order (6 M)
6. (a) Write short note on Tree-based indexing technique. (6 M)
- (b) Illustrate with an example, how can you reduce accessing time using primary index. (6 M)
7. (a) Give implementation details of Dynamic Hashing. (6 M)
- (b) Write short notes on Indexed Sequential Access Methods(ISAM). (6 M)



Subject Code: R16MCA202

MCA - II Semester Regular & supplementary Examinations, June - 2019
OOPS THROUGH JAVA

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What are the major features object oriented programming language java?
(b) Write the basic datatypes available in java language.
(c) Briefly explain the use of final and super keywords.
(d) What is the use of finally keyword in exception handling mechanism?
(e) Explain Adapter Class in detail.
(f) Write the differences between Application Program and an Applet.

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. (a) What are Object Oriented Principles? Explain in detail about each principle.
(b) Explain the major ideas in object-oriented programming by Writing in your own words about "a way of viewing world" in terms of Agents and Communities, messages and methods, Responsibilities.
3. (a) What is the importance of this keyword? Demonstrate its usage with suitable example.
(b) Discuss various types of constructors in java with suitable example.
4. (a) Define Inheritance? What are the advantages of Inheritance? Explain them with an example.
(b) Write the differences between Method Overloading and Overriding.
5. (a) Draw a neat sketch for life cycle of thread. Explain each state of thread.
(b) Develop a java program that creates three threads using extending Thread Class display messages first thread : good morning for every 1 second second thread : hello for every 2 seconds third thread : welcome for every 3 seconds
6. (a) What is Layout Manager? What are different types of Layouts available in AWT? Explain them in detail with examples.
(b) How can you handle various mouse events? Give suitable example
7. (a) What is an applet? Explain life cycle of an applet with neat diagram and suitable example java program.
(b) What do you mean by JButton? What is the use of JButton? Explain with its constructors, methods and Events?



Subject Code: R16MCA203

MCA - II Semester Regular/supplementary Examinations, June - 2019
OPERATING SYSTEMS

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. a) What are distributed systems?
b) Distinguish process and thread.
c) What are the necessary and sufficient conditions for deadlock occurrence?
d) What is semaphore?
e) What is belady's anomaly?
f) What is disk scheduling?

[2+2+2+2+2+2]

PART-B

4X 12 = 48

2. a) Explain Operating system services
b) What is System call? Explain any 3 system calls with example.
3. a) What is interprocess communication ? Discuss client server system.
b) What is thread? Discuss multithreading models.
4. a) What is preemptive scheduling ? Illustrate Round robin scheduling with example.
b) Explain banker's algorithm for deadlock avoidance.
5. a) What is critical section? Explain Peterson's solution for mutual exclusion.
b) Explain solution for Reader-Writer's problem using semaphores
6. a) What is demand paging ? Illustrate demand paging technique with example.
b) Explain file allocation methods.
7. a) Explain disk scheduling algorithms.
b) What are the goals and principles of protection. Discuss use of access matrix in protection.



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Subject Code: R16MCA204

MCA - II Semester Regular and Supplementary Examinations, June-2019. OPTIMIZATION TECHNIQUES

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

- (a) Give examples of various types of models.
(b) Explain the importance of artificial variables.
(c) Describe the transportation problem with its general mathematical formulation.
(d) Describe any two replacement situations.
(e) Explain minimax and maximin principle used in the theory of games.
(f) What is slack of an activity and how do you calculate it?

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PART-B

4X 12 = 48

- (a) Discuss the significance and scope of operations research in modern management. (6M)
(b) Explain the phases of operations research. (6M)
- (a) Using graphical method, solve the following LPP

$$\begin{aligned} \text{Max. } Z &= 2x_1 + 3x_2 \\ \text{subject to } &x_1 - x_2 \leq 2 \\ &x_1 + x_2 \geq 4 \text{ and } x_1, x_2 \geq 0. \end{aligned}$$

(4M)

- (b) Solve the following LPP using big-M method

$$\begin{aligned} \text{Max } Z &= 2x_1 + 3x_2 + 10x_3 \\ \text{Subject to } &x_1 + 2x_3 = 2 \\ &x_2 + x_3 = 1 \text{ and } x_1, x_2, x_3 \geq 0. \end{aligned}$$

(8M)

- A marketing manager has five salesmen and five sales districts. Considering the capabilities of the salesmen and the nature of districts, the marketing manager estimates that the sales per month (in thousand rupees) for each salesman in each district would be as follows.

| | Districts | | | | | |
|----------|-----------|----|----|----|----|----|
| | A | B | C | D | E | |
| Salesmen | 1 | 32 | 38 | 40 | 28 | 40 |
| | 2 | 40 | 24 | 28 | 21 | 36 |
| | 3 | 41 | 27 | 33 | 30 | 37 |
| | 4 | 22 | 38 | 41 | 36 | 36 |
| | 5 | 29 | 33 | 40 | 35 | 39 |

Find the assignment of salesmen to districts that will result in maximum sales.

(12M)

5. The cost of a machine is Rs. 6100 and its scrap value is Rs. 100. The maintenance costs found from experience are as follows

| | | | | | | | | | |
|-------------------|---|-----|-----|-----|-----|-----|------|------|------|
| Year | : | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Maintenance cost: | | 100 | 250 | 400 | 600 | 900 | 1200 | 1600 | 2000 |

When should the machine be replaced? (12M)

6. There are five jobs, each of which must go through the machines A, B and C in the order ABC.

Processing times (in hours) is as follows:

| | | | | | | |
|-----------|---|---|---|---|---|---|
| Job | : | 1 | 2 | 3 | 4 | 5 |
| Machine A | : | 5 | 7 | 6 | 9 | 5 |
| Machine B | : | 2 | 1 | 4 | 5 | 3 |
| Machine C | : | 3 | 7 | 5 | 6 | 7 |

Determine the sequence for the jobs that will minimize the total elapsed time and idle times for the machines (12M)

7. A project schedule has the following characteristics

| | | | | | | | | | |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Activity | 1-2 | 1-3 | 1-4 | 2-5 | 2-6 | 3-6 | 4-7 | 5-7 | 6-7 |
| Time t_o | 5 | 18 | 26 | 16 | 15 | 6 | 7 | 7 | 3 |
| t_m | 8 | 20 | 33 | 18 | 20 | 9 | 10 | 8 | 4 |
| t_p | 10 | 22 | 40 | 20 | 25 | 12 | 12 | 9 | 5 |

- (a) Construct a PERT network. (4M)
- (b) Find expected duration of the project. (6M)
- (c) Find the probability that the project will be completed within 41 weeks. (2M)



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Subject Code: R16MCA205

MCA - II Semester Regular/Supplementary Examinations, June - 2019

ORGANIZATIONAL STRUCTURE AND PERSONNEL MANAGEMENT

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Importance of Management
- (b) Formal Vs informal organisation
- (c) Role of HR Manager in an organisation
- (d) SWOT Analysis
- (e) Need for Motivation
- (f) Value Chain Analysis

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PART-B

4X 12 = 48

2. (a) Define Management and explain its nature
- (b) Explain functions of Management
3. (a) What do you mean by Organisation Structure
- (b) Describe factor affecting organisation structure
4. (a) Define Human Resource Management. Explain its scope
- (b) Explain the qualities necessary for HR Manager
5. (a) What is strategic Management? Explain its necessity.
- (b) Discuss its benefits and limitations
6. (a) What do you mean by Motivation.
- (b) Explain Maslow's Need hierarchy Theory.
7. Write a note on
 - (a) HRIS
 - (b) JIT
 - (c) BPO

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