

**School of Distance Education,
University of Kerala
M.Sc. Computer Science (2024 admission)
Second Semester Assignment Questions**

DCS 21 Modern Operating Systems

1. Explain
 - a) Process Control Block (PCB)
 - b) Resource Allocation Graph (RAG)
 - c) Semaphore
 - d) Acyclic Graph Directories
2. Differentiate Bits algorithm & Second chance Algorithm.
3. How can we prevent the occurrence of a deadlock. Explain in detail.
4. Write about page buffering algorithms.
5. Explain about the Linux file attributes and file operations.

DCS22 Advances in Database Management

1. Write a note on different types of normalization forms.
2. List the advantages and limitations of OODBMS.
3. Write short note on
 - a) Gnome database
 - b) Armstrong's Axioms
 - c) Two phase commit Protocol
 - d) Semantic databases
4. Write a note about Multimedia databases and its applications.
5. What are the things to consider while reducing ER Schema to table?

DCS 23 Object Oriented Analysis and Design

1. Explain about UML Diagrams with examples.
2. Write a short note on the followings
 - a) Composition and Aggregation
 - b) Coupling and Cohesion
 - c) Generalization and Specialization
 - d) Black box testing and White box testing.
3. Discuss classification and method of identifying classes in detail.
4. Explain in detail the different types of database models.
5. Explain FLOOT in detail.

DCS24 Graphics and Multimedia Systems

1. Explain about DDA line drawing algorithm.
2. Explain
 - a) 3D transformations.
 - b) Lz77 approach.
 - c) Lossy and lossless compression
 - d) Parallel and Perspective Projection
 - e) MIDI
3. Briefly explain any two video file formats.
4. Describe Huffman coding and give some applications of Huffman coding.
5. Explain different principles in making animations using video.

DCS25 Optimization Techniques

1. Consider a chocolate manufacturing company that produces only two types of chocolate
 - A and B. Both the chocolates require Milk and Choco only. To manufacture each unit of A and B, the following quantities are required:
 - Each unit of A requires 1 unit of Milk and 3 units of Choco
 - Each unit of B requires 1 unit of Milk and 2 units of Choco

The company kitchen has a total of 5 units of Milk and 12 units of Choco. On each sale, the company makes a profit of

- Rs 6 per unit A sold
- Rs 5 per unit B sold.

Now, the company wishes to maximize its profit. How many units of A and B should it produce respectively?

2. Solve by Big M method

$$\begin{array}{ll}\text{Minimize} & Z = 12x_1 + 20x_2, \\ \text{Subject to} & 6x_1 + 8x_2 \geq 100 \\ & 7x_1 + 12x_2 \geq 120 \\ & x_1, x_2 \geq 0\end{array}$$

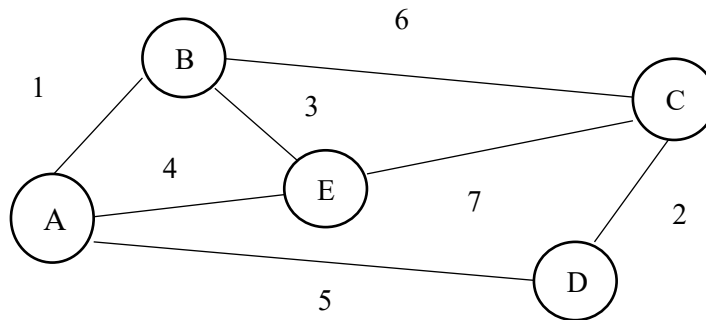
3. The ICARE Company has three plants located throughout a state with production capacity 50, 75 and 25 gallons. Each day the firm must furnish its four retail shops R1,

R2, R3, & R4 with at least 20, 20 , 50, and 60 gallons respectively. The transportation costs (in Rs.) are given below

Company	Retail				Supply
	R1	R2	R3	R4	
P1	3	5	7	6	50
P2	2	5	8	2	75
P3	3	6	9	2	25
Demand	20	20	50	60	

The economic problem is to distribute the available products to different retail shops in such a way so that the total transportation cost is minimum.

4. Use Dijkstra's algorithm to determine a shortest path from A to C for the following network



5. The following details are available regarding a project:

Activity	Predecessor Activity	Duration (Weeks)
A	-	3
B	A	5
C	A	7
D	B	10
E	C	5
F	D,E	4

Determine the critical path, the critical activities and the project completion time.
