

School of Distance Education, University of Kerala

M.Sc. Computer Science (2021 Admission)

IInd Semester Assignment

DCS 21 Modern Operating Systems

1. Discuss
 - A) Overview of threads
 - B) Multithreading Models
 - C) Multi-threading issues
 - D) P threads
2. How can we evaluate a process scheduling algorithm? Explain.
3. Differentiate Bits algorithm & Second chance Algorithm.
4. What is the criteria for allocation of frames?
5. Explain in detail about File system structure.

DCS22 Advances in Database Management

1. Write a note on multimedia database.
2. List the advantages and limitations of OODBMS.
3. What is Gnome database? Explain
4. Write a note on knowledge database.
5. What are the things to consider while reducing ER Schema to table?

DCS 23 Object Oriented Analysis and Design

1. Illustrate with an example, the relationship between sequence diagram and use cases.
2. Write a short note on the followings
 - a) Code generation
 - b) Multiplicity
 - c) Generalization
 - d) Specialization
 - e) CRC Cards

3. Discuss about classification and method of identifying classes in detail.
4. What is association? Explain with an example also explain the ways of eliminating unnecessary associations.
5. Explain FLOOT in detail.

DCS 24 Graphics and Multimedia Systems

1. Explain in detail with respect to 3D display method of parallel and perspective projection.
2. Explain about 3D display techniques
3. Briefly explain any two video file formats.
4. Describe Huffman coding and give some applications of Huffman coding.
5. Illustrate the broadcast standards such as ATSC, NTSC, PAL, and SECAM.
6. Explain about Lz77 approach.

DCS 25 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) Use Simplex method to solve

$$\text{Minimize : } -z = -8x_1 - 10x_2 - 7x_3$$

$$\text{s.t. : } x_1 + 3x_2 + 2x_3 \leq 10$$

$$-x_1 - 5x_2 - x_3 \geq -8$$

$$x_1, x_2, x_3 \geq 0$$

- 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 product to different retail shops in such

a way so that the total transportation cost is minimum?

- 4) A plant manager has four subordinates, and four tasks to be performed. The subordinates differ in efficiency and the tasks differ in their intrinsic difficulty. This estimate of the times each man would take to perform each task is given in the effectiveness matrix below.

	I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

How should the tasks be allocated, one to a man, so as to minimize the total man hours?

- 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.
