

School of Distance Education

University of Kerala

M. Sc Computer Science

II Semester Assignment Questions

DCS 21-Modern Operating Systems

(Answer all the questions, Max marks =10)

1) Explain

- a) Multi threading models
- b) Mutli threading Issues
- c) Pthreads

2) Explain

- a) Goals of Protection
- b) Domain of Protection
- c) Access Matrix and Implementation of Access matrix
- d) Recvocation of Access Rights
- e) Language based Protection

3) Explain

- a) Security Problem
- b) User Authentication
- c) Program Threats
- d) System Threats
- e) OS Security Functions
- f) Trusted Operating Systems

DCS22 -Advances in Data Base Management

(Answer all Questions : Max Marks 10)

- 1) Compare Spatial and geographic information database systems
- 2) Discuss briefly about genome database, genomics, genome expression and proteomics
- 3) What is knowledge database, deductive database and semantic database
- 4) What are the issues, advantages, limitations of OODBMS
- 5) Design and draw an ER diagram that captures the information about the University. Use only the basic ER model here ie entities , relationships and attributes. Be sure to indicate any key and participation constraints.

DCS 23- Object Oriented Analysis & Design

(Answer all Questions : Max Marks 10)

- 1) What are the challenges faced by software engineering?
- 2) Why do we say a software is inherently complex?
- 3) Explain elements of complexity in software system.
- 4) How can we handle complexity of software system based on object oriented concept?
- 5) What are the major elements of object model?
- 6) Explain what do you mean by object oriented analysis.
- 7) What are the types of programming languages?
- 8) What do you mean by objects? What are the operations of objects?
- 9) Explain UML.

DCS24-Graphics & Multimedia Systems

(Answer all Questions : Max Marks 10)

1. Consider the line from (3, 2) to (4, 7), use DDA line algorithm to rasterize this line. Evaluate and tabulate all the steps involved.
2. Consider the line from (0, 0) to (-8,-4), use general Bresenham's line algorithm to rasterize this line. Evaluate and tabulate all the steps involved.
3. Draw a circle using mid-point circle generation algorithm with center of circle as (0,0) and radius =10
4. Briefly explain digitization of speech in speech processing
5. Write notes on audio file formats.
6. Explain text compression in detail

(DCS-25) Optimization Techniques

(Answer all Questions : Max Marks 10)

1. Find the maximum value of $z = 3x_1 - 2x_2$ such that

$$x_1 - x_2 \geq 0, 3x_1 - x_2 \leq 3, \quad x_1, x_2 \geq 0$$

2. Use simplex method to solve the L.P.P.

Maximise $z = 5x_1 + 2x_2 + 3x_3 - x_4 + x_5$ subject to the constraints:

$$x_1 + 2x_2 + 2x_3 + x_4 = 8$$

$$3x_1 + 4x_2 + x_3 + x_5 = 7$$

$$x_1, x_2, x_3, x_4, x_5 \geq 0$$

3. Use penalty method to minimize $z = 12x_1 + 20x_2$ subject to the constraints:

$$6x_1 + 8x_2 \geq 100, 7x_1 + 12x_2 \geq 120 \text{ and } x_1, x_2 \geq 0.$$

4. Solve the following L.P.P.:

Maximize $z = 2x_1 + x_2$ subject to the constraints:

$$4x_1 + 3x_2 \leq 12, 4x_1 + x_2 \leq 8$$

$$4x_1 - x_2 \leq 8, x_1, x_2 \geq 0.$$

5. Obtain the dual problem of the following primal problem:

Minimize $z = x_1 - 3x_2 - 2x_3$, subject to the constraints:

$$3x_1 - x_2 + 2x_3 \leq 7, \quad 2x_1 - 4x_2 \geq 12, -4x_1 + 3x_2 + 8x_3 = 10$$

$$x_1, x_2 \geq 0 \text{ and } x_3 \text{ is unrestricted.}$$

6. Consider four bases of operations B_i and three targets T_j . The tons of bombs per aircraft from any base that can be delivered to any target are given in the following table:

		Target (T_j)		
		T_1	T_2	T_3
Base (B_i)	B_1	8	6	5
	B_2	6	6	6
	B_3	10	8	4
	B_4	8	6	4

The daily sortie capability of each of the four bases is 150 sorties per daily.

The daily requirement in sorties over each individual target is 200. Find the

allocation of sorties from each base to each target which maximizes the total tonnage over all the three targets explaining each step.

7. A company has three plants at locations A, B and C, which supply to warehouses located at D, E, F, G and H. Monthly plant capacities are 800, 500 and 900 units respectively. Monthly warehouse requirements are 400, 400, 500, 400 and 800 units respectively. Unit transportation costs (in rupees) are given below:

		To				
		D	E	F	G	H
From	A	5	8	6	6	3
	B	4	7	7	6	5
	C	8	4	6	6	4

Determine an optimum distribution for the company in order to minimize the total transportation cost.

8. Explain the difference between transportation problem and an assignment problem.
9. Solve the game whose pay-off matrix is given by

(a)

	B_1	B_2	B_3
A_1	1	3	1
A_2	0	-4	-3
A_3	1	5	-1

(b)

	B_1	B_2	B_3
A_1	-2	15	-2
A_2	-5	-6	-4
A_3	-5	20	-8