(ii) Assignment problem

(iii) Group Replacement Policy

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Question Paper Code : 6494

B.C.A. (Semester-IV) Examination, 2018

[New Syllabus]

OPTIMIZATION TECHNIQUES

[Fourth Paper]

[BCA-S-209]

Time : Three Hours] **[Maximum Marks : 100**

Note : Answer **five** questions in all. Question **No.1** is **compulsory**. Besides this, **one** question is to be attempted from each Unit.

1. Write short notes on the following : [4×10=40]

   (a) Define feasible solution of a transportation problem.

   (b) "Optimization techniques is a Science". Explain in support.

   (c) Define mathematical model in detail.

   (d) Define loops in transportation problem.

   (e) Define Idle time in sequencing problem.

   (f) Define Order Cycle in detail.

   (g) Define objective function and constraints in LPP.

(h) Define infeasible solution in detail.

(i) Define anticipation inventories in detail.

(j) Discuss the situations in which replacement becomes essential.

UNIT-I

2. Explain how and why optimization techniques are valuable in aiding executive decisions. [15]

3. Use simplex method to solve the following LPP : [15]

Maximize $Z = 5x_1 + 3x_2$

Subject to constraints $x_1 + x_2 \leq 2$, $5x_1 + 2x_2 \leq 10$

$3x_1 + 8x_2 \leq 12$, $x_1, x_2 \geq 0$

UNIT-II

4. Define linear programming problem and its mathematical formulation by taking the example of your own choice. [15]

5. What do you understand by 'duality' in linear programming? Write the dual of the following primal problem : [15]

Maximize $Z = 5x_1 + 2x_2$

Subject to $x_1 - x_2 \geq 2$

$2x_1 + 3x_2 \leq 5$

$x_1, x_2 \geq 0$

UNIT-III

6. (a) Define sequencing problems with its major assumptions. [8]

(b) Describe Economic order quantity (EOQ) graph in detail. [7]

7. Describe Economic order quantity (EOQ) problem with no shortage. Derive the optimum value of Quantity (Q) purchased in fixed number of equal intervals. [15]

UNIT-IV

8. Describe Vogel's approximation method in detail and obtain an initial feasible solution using this method to the following product distribution problem : [15]

	Destination (City)				
Factory	C1	C2	C3	C4	Availability
O1	20	22	17	04	120
O2	24	37	09	07	70
O3	32	37	20	15	50
Demand	60	40	30	110	240

Costs are expressed in terms of rupees per unit shipped.

9. Write short notes on the following : [5×3=15]

(i) Limitations of queing theory