

Sl. No. 504

BCAT 355

No. of Printed Pages : 4

Following Paper ID and Roll No. to be filled in your Answer Book.

**PAPER ID : 1125**

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## BCA Examination 2018-2019

(Fifth Semester)

### OPTIMIZATION TECHNIQUE

*Time : Three Hours]*

*[Maximum Marks : 100*

**Note :-** Attempt all questions.

1. Attempt any four parts of the following:  $5 \times 4 = 20$

(a) Solve following LPP by graphical method

Max.  $Z = 5x_1 - 2x_2$  subject to

constraints :  $2x_1 + x_2 \leq 2$

$-x_1 + 2x_2 \geq 3$  and  $x_1, x_2 \geq 0$

(b) Explain the artificial variable and its importance in linear programming.

(c) Explain Dual simplex method.

*[ P. T. O.*

- (d) State the general rules by formulating dual LPP from its primal.
- (e) Explain the importance by Two phase method over Big -M method.
- (f) What do you mean by LPP. Explain its components.
2. Attempt any Two parts of the following:  $10 \times 2 = 20$
- (a) What is Degeneracy in transportation problem. How is Transportation problem solve when demand and supply are not equal.
- (b) Explain matrix minima and vogal's Approximation method to find Basic Feasible solution by Transportation problem.
- (c) Solve following assignment problem for minimum cost:

	P	Q	R	S	T
A	6	5	8	11	9
B	5	9	11	8	8
C	8	5	4	4	5
D	3	7	5	7	7
E	4	6	6	6	7

3. Attempt any Two parts of the following:  $10 \times 2 = 20$

(a) Solve following for integer solution by Gomory's cutting plane method:

$$\text{Max } z = x_1 + 9x_2 + x_3^3$$

Subject to constraints:

$$x_1 + 2x_2 + 3x_3 \leq 9$$

$$3x_1 + 2x_2 + 2x_3 \leq 15$$

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

(b) Explain the steps of Branch and Bound method to find integer solution by IPP.

(c) What do you mean by Quadratic programming problem. Explain wolf's method.

4. Attempt any four parts of the following:  $5 \times 4 = 20$

(a) Discuss the various costs involved in inventory model.

(b) Explain the types by Inventories.

(c) What do you mean by Economic order quantity.

*[ P. T. O. ]*

- (d) Explain Two price break inventory model.
- (e) The cost by machine is Rs. 6100 and its scrap value is Rs. 100. The maintenance costs 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.

- (f) A company uses annually 50000 units of item each costing Rs. 1.20, each order cost Rs. 45 and inventory carrying cost 15% of the annual average inventory value. Find EOQ.

5. Attempt any Two parts:  $10 \times 2 = 20$

- (a) Explain the following terms in CPM/PERT
- Earliest time
  - Latest time
  - Total activity Time.
- (b) Explain the sequencing problem for  $n$  jobs on 3 machines with example.
- (c) Explain the steps by construction by Network diagram. Also explain Float and critical path.

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