

Roll No.

Total No. of Pages : 02

Total No. of Questions : 07

B.Com. (2011 & Onward) (Sem.-3)

OPERATION RESEARCH

Subject Code : BCOP-304

Paper ID : [B1127]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
- 2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.**

SECTION-A

I. Write briefly :

- (a) Discuss briefly the applications of linear programming.
- (b) Discuss briefly the Hungarian Method of Assignment.
- (c) What are the basic assumptions of transportation model?
- (d) Write down the steps of northwest Corner method.
- (e) What is a saddle point?
- (f) What is meant by mixed strategies?
- (g) What are the possible applications of game theory'?
- (h) What is meant by idle time in sequence problem?
- (i) What is meant by slack?
- (j) What is the decision rule in case of quantity discount models?

SECTION-B

2. Max. $Z = x_1 + 2x_2 + 3x_3 - x_4$

Subject to $x_1 + 2x_2 + 3x_3 = 15$

$$2x_1 + x_2 + 5x_3 = 20$$

$$x_1 + 2x_2 + x_3 + x_4 = 10$$

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

3. Solve the transportation problem to maximise profits & give criterion for optimality.

	I	II	III	IV	Capacity
A	40	25	22	33	100
B	44	35	30	30	30
C	38	38	28	30	70
Requirement	40	20	60	30	200 150

4. Solve the following Assignment Problem. The data given in the table refer to production in units.

Operators	Machines			
	A	B	C	D
1	10	5	7	8
2	11	4	9	10
3	8	4	9	7
4	7	5	6	4
5	8	9	7	5

5. Solve the following game :

		B	
		I	II
A	I	1	8
	II	3	5
	III	11	2

6. What do you mean by EOQ? Derive the formula of EOQ model.
7. The manager of an oil refinery must decide on the optimal mix of two possible blending processes of which the inputs and outputs per production run are as follows :

Process	Input (units)		Output (units)	
	Crude A	Crude B	Gasoline X	Gasoline Y
1	5	3	5	8
2	4	5	4	4

The maximum amount available for crudes A and B is 200 units and 150 units respectively. Market requirements show that at least 100 units of Gasoline X and 80 units of Gasoline Y must be produced. The profits per production run from process 1 and process 2 are Rs. 300 and Rs. 400 respectively. Solve the L.P.P by Graphical Method.