* D R R - 3 2 5 5 *

DRR-3255

B. Sc. (Sem. VI) (Mathematics) Examination

March / April - 2016

Operations Research - II

(Elective Generic)

Time : Hours] [Total Marks : **50**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. Sc. (Sem. VI) (Mathematics)**

Name of the Subject :

☛ **Operations Research - II** *(Elective Generic)*

☛Subject Code No. : **3 2 5 5** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) All questions are compulsory.

(3) Figures to the right indicate marks of the question.

(4) Follow usual notations.

(5) Use of non-programmable calculator is allowed.

1 (a) Answer any Three as directed : **10**

(1) State the general matrix form of the Assignment problem.

(2) Solve the following Assignment Problem.

		Employer		
		A	***B***	***C***
Job	***I***	20	10	20
	II	30	60	50
	III	10	20	20

(3) Write the general form of Transportation Problem.

(4) What is the Rim condition? Explain.

(5) Define : (i) Two-person zero-sum game,
(ii) Payoff matrix.

(6) Solve the following Game:

		Player B	
		B_1	B_2
Player A	A_1	9	2
	A_2	8	6
	A_3	6	4

2 Attempt any Two. **20**

(1) Solve the Assignment Problem:

		To				
		A	*B*	*C*	*D*	*E*
From	*I*	40	32.50	115	47.50	50
	II	33.75	30	130	40	43.50
	III	35	27.50	31.25	42.50	46.25
	IV	12.5	13.75	20	20	27.50
	V	13.75	8.75	20	20	26.25

(2) Solve the Assignment Problem:

		Machine				
		A	*B*	*C*	*D*	*E*
Operator	1	5	7	11	6	7
	2	8	5	5	6	5
	3	6	7	10	7	3
	4	10	4	8	2	4

(3) Solve the Assignment Problem:

		Task			
		1	2	3	4
Employee	*A*	5	3	2	8
	B	7	9	2	6
	C	6	4	5	7
	D	5	7	7	8

(4) Use Graphical method to solve the following Game:

		Player B				
		B_1	B_2	B_3	B_4	B_5
Player A	A_1	1	3	−1	4	2
	A_2	−3	5	6	1	2

3 Attempt any two. **20**

(1) Obtain an optimal solution of the following Transportation Problem:

		Customers					Availability
		C_1	C_2	C_3	C_4	C_5	
Shop	S_1	40	10	30	40	40	600
	S_2	20	30	20	20	30	350
	S_3	30	50	20	40	40	400
Requirement		220	450	200	180	300	

(2) Find the optimal solution of the following Transportation problem.

		To					Supply
		D_1	D_2	D_3	D_4	D_5	
From	V_1	50	80	60	60	30	8
	V_2	40	70	70	60	50	5
	V_3	80	40	60	60	40	9
Demand		4	4	5	4	8	

(3) Find the initial feasible solution of the following Transportation problem using (i) North-West Corner Method and (ii) Least Cost Method.

		Customers				Production
		C_1	C_2	C_3	C_4	
Products	P_1	11	20	7	8	50
	P_2	21	16	20	12	40
	P_3	8	12	8	9	70
Requirement		30	25	35	40	

(4) Use the graphical method to solve the following Game:

		Player B	
		B_1	B_2
Player A	A_1	−6	7
	A_2	4	−5
	A_3	−1	−2
	A_4	−2	5
	A_5	7	−6