Dr. Babasaheb Ambedkar Open University
Term End Examination July- 2016

Course : Diploma in Operation Research **(DOR)**

Roll No.: _____

Subject : Basics of Operation Research **(DOR-01)**

Date : **10/07/2016**

Time : **03.00 to 06.00**

N.B. : All questions carry equal Marks. **Total Marks : 70**

Q.1 Define Operation Research and its uses in various areas. **(14)**

OR

Explain the nature and Significance of Operations Research with steps.

Q.2 State the guidelines in Linear Programming model formulation. **(14)**

OR

Explain the graphical solution of linear programming problems.

Q.3 Find the values of X_1, X_2 such that $Z=3x_1 + 4x_2$ is maximum subject to the following constraints. **(14)**

$2x_1 + 5x_2 \leq 120$

$4x_1+2x_2 \leq 80$

$x_1, x_2 \geq 0$

OR

Explain relation between Operations Research and decision Making.

Q.4 Discuss about application Areas of Linear Programming. **(14)**

OR

Explain the special cases in Linear Programming.

Q.5 Anisha Ltd. Produces two types of machines for producing machine of type A, 2 tons of iron and 250 working hours are required and for producing machine of type B, 4 tons of iron and 160 working hours are required. The manufacturer has 950 tons of iron and 65,000 working hours at his disposal. **(14)**

If the profit on type A machine is rupees 550 and that on type B machine is rupees 800.

Find how many machines of type A and type B should be produced to get maximum profit.

OR

Explain:

1. Procedure of Operations research.
2. Importance of linear programming.

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Course : Diploma in Operation Research **(DOR)**

Roll No.: _____

Subject : Assignment and Transportation Problems. **(DOR-02)**

Date : **11/07/2016**

Time : **03.00 to 06.00**

N.B. : All questions carry equal Marks. **Total Marks : 70**

Q.1 Explain Assignment Problem. **(14)**

OR

Explain Traveling Salesman problem.

Q.2 Obtain a feasible solution of the following transportation problem by North-West corner rule for Shyam Ltd. **(14)**

Origins		**P**	**Q**	**R**	**S**	**Supply**
	A	1	5	2	6	13
	B	9	10	3	8	17
	C	5	4	7	3	5
Requiremeut		5	11	15	4	35

The expense matrix shows the transportaticn expense in Rs. Per unit.

OR

Solve the following assignment problem to minimize the total expense for Ram ltd.

Destinations

Origins	**D1**	**D2**	**D3**	**D4**	**D5**
Q1	3	5	4	6	5
Q2	8	5	7	9	5
Q3	3	10	9	11	5
Q4	9	7	13	8	5
Q5	3	9	6	9	9

Q.3 Solve the problem to minimize the total distance travaled. **(14)**

	P	**Q**	**R**	**S**	**T**	**U**
A	41	62	39	52	25	51
B	22	29	49	65	81	50
C	27	29	60	51	32	32
D	45	50	48	52	37	43
E	29	40	39	26	30	33
F	82	40	40	60	51	30

OR

Solve the following assisnment Problem to maximize the total Profit for sun ltd

(Profit in Rs.)

	D1	**D2**	**D3**	**D4**
Q_1	3	4	11	9
Q_2	5	7	8	9
Q_3	5	6	6	7
Q_4	4	6	8	8

P.T.O

Q.4 Obtain a feasible solution of the following problem by Matrix minima Method for Sun Ltd. **(14)**

Form	P	Q	R	Supply
1	5	6	7	6
2	12	8	4	10
3	3	10	14	3
Requiremeut	10	4	5	19

OR

The Price of a machine is Rs. 9,000. Its maintain expense is Rs. 200 for the first year and then it increase by Rs. 2,000 per year At What time is it possible to replace the Machine.

Q.5 Write a short-note on any two of the following. **(14)**

(a) Matrix minima Method
(b) Least cost Method
(c) Problem of replcement
(d) Restriction of Assignment

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Course : Diploma in Operation Research **(DOR)**

Roll No.: _____

Subject : PERT & CPM **(DOR-03)**
Date : **12/07/2016**
Time : **03.00 to 06.00**
N.B. : All questions carry equal Marks. **Total Marks : 70**

Q.1 Explain the meaning of PERT and CPM and distinguish between two. **(14)**

OR

Discuss Errors and Dummies in network.

Q.2 Explain Backward pass method. **(14)**

OR

Write a note on Critical Path Analysis.

Q.3 Discuss float of an Activity and Event. **(14)**

OR

Discuss different phases of Project Management.

Q.4 **Write Short note on any two:**(1) Resource Smoothing. **(14)**
(2) Backward pass Method.
(3) Project Scheduling with uncertainty.
(4) Significance of PERT and CPM.

Q.5 Prepare Network Diagram. **(14)**

Activity	Immediate Predecessor Activities
A	-
B	A
C	B
D	C
E	A
F	E
G	E
H	HI

OR

Draw network diagrams.

Activity	Predecessor Activity		
	Set1	Set2	Set3
A	-	-	-
B	-	-	-
C	-	-	-
D	A	A	A
E	B	A,B	A,B
F	B,C	A,B,C	B,C
G	D,E,F	D,E,F	C

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Course : Diploma in Operation Research **(DOR)** **Numerical Code: 0030**
Subject : PERT & CPM **(DOR-04)** **Numerical Code: 0191**
Date : **13/07/2016** **Roll No._____**
Time : **03.00 to 06.00**
N.B. : All questions carry equal Marks. **Total Marks : 70**

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1. What is decision making? Discuss steps in decision theory approach. **(14)**

OR

Discuss types of decision making environment.

2. Explain decision making under uncertainty. **(14)**

OR

Write short note on: The EMV and EOL criterion.

3. Explain decision tree analysis **(14)**

OR

The probability of the demand for lorries for hiring an any day in a given district is as follows.

No.of lorries demanded	0	1	2	3	4
Probability	0.1	0.2	0.3	0.2	0.2

Lorries have a fixed expense of Rs.90 each day to keep daily hire charges (net of variable expense of running) Rs.200. if the lorry hire company owns 4 Lorries, what is its daily operation? If the company is about to go into business and currently has no Lorries, how many Lorries should it buy?

4. Explain degrees of certainty. **(14)**

OR

Explain following techniques to deal with Risk
(i) Risk adjusted Discount rate
(ii) Certainty Equivalent Coefficient

5. Write Short note on any two. **(14)**
(i) Pay back criteria
(ii) Simulation
(iii) Coefficient variation
(iv) Optimistic – pessimistic Estimates
