Dr. Babasaheb Ambedkar Open University
Term End Examination February-2015

Course	: Diploma in Operation Research (DOR)	**Numerical Code:** 0030 **Roll No.: _____**
Subject	: Basics of Operation Research (DOR-01)	**Numerical Code:** 0188
Date	: 20/02/2015	
Time	: 11.00 to 02.00	
N.B.	: All questions carry equal Marks.	**Total Marks ₹ 70**

Q.1 Explain the meaning of Operations Research and its History in brief. **(14)**

OR

Discuss the scope of Operations Research.

Q.2 State the advantages and limitations of linear programming models. **(14)**

OR

Write short note on the graphical solution of linear programming problems.

Q.3 Use the graphical method to solve the following L.P. problem for A Ltd. **(14)**

Minimize $Z = -x_1 + 2x_2$

Subject to the constraints

$$-x_1 + 3x_2 \leq 10$$
$$x_1 + x_2 \leq 6$$
$$x_1 - x_2 \leq 2$$
$$x_1, x_2 \geq 0$$

OR

Describe various research models.

Q.4 State the application areas of linear programming models. **(14)**

OR

Explain the general Mathemetical Model of Linear programming problem.

Q.5 A milkman wants to purchase cows and buffaloes. He may accommodate at the most 20 animals in the available space. The daily expense on food and grass for a cow is Rs. 5 and that on a buffalo is Rs.10. The milkman may spend at the most Rs.136 a day. Each cow gives 5 litres milk and each buffalo gives 8 litres milk every day. **(14)**

How many cows and buffaloes should be purchased so as to get maximum quantify of milk?

OR

Explain:

1. Assumptions of Linear programming.
2. Opportunities and shortcomings of operations Research Approach.

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Course : Diploma in Operation Research **(DOR)** **Numerical Code: 0030**
Roll No.: _____
Subject : Assignment and Transportation Problems. **(DOR-02)** **Numerical Code: 0189**
Date : **20/02/2015**
Time : **03.00 to 06.00**
N.B. : All questions carry equal Marks. **Total Marks : 70**

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

OR

Explain Travelling Salesman problem

Q.2 Explain Mathematical Model of Transportation problem. **(14)**

OR

Describe the steps to the Method of solution for Assignment problem.

Q.3 Obtain the solution of the following transportation problem by Matrik- Minima Method. **(14)**

For Axay Ltd.

	A	B	C	D
f_1	10	9	8	8
f_2	10	7	10	7
f_3	11	9	7	9
f_4	12	14	10	4
B_1	10	10	8	28

OR

Solve for problem so as to Maximize the profit for X Ltd.

(profit in Rs.) Jobs

		A	B	C	D
	P	11	12	13	14
Worker	Q	14	15	16	17
	R	15	16	17	18
	S	18	17	16	15

Q.4 Solve the following transportation problem by North-West corner rule for Akash Ltd. **(14)**

To

From	1	2	3	Supply
I.	7	12	9	16
II.	8	10	6	10
III.	10	9	12	12
Supply	8	11	19	38

OR

Obtain basic feasible solution of the following problem by vogel's Method for Jayraj Ltd.

To

From		A	B	C	Supply
	1	150	130	330	1
	2	190	145	270	3
	3	350	300	150	5
Demand		4	2	3	9

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

1. Vogel's Approximation Method.
2. Least cost Method.
3. Problem for replacement.
4. Restriction on Assignmen.

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Term End Examination July- 2014

Course : Diploma in Operation Research **(DOR)** **Numerical Code: 0030**
Roll No.:_____
Subject : PERT & CPM **(DOR-03)** **Numerical Code: 0190**
Date : **24/07/2014**
Time : **11.00 to 02.00**
N.B. : All questions carry equal Marks. **Total Marks : 70**

Q.1 Explain significance of using PERT & CPM **(14)**

OR

Describe the various stages of project management

Q.2 Explain: - Time-Expanse Trade-off procedure. **(14)**

OR

Give concept of different time estimates in performing the activity. How will you calculate expected time of an activity using these time estimates?

Q.3 Explain:- Critical Path **(14)**

OR

What is PERT AND CPM? Give the basic difference between PERT AND CPM.

Q.4 Write short note on any two. **(14)**

1. Events
2. Activities
3. Error and Dummies in Network
4. Resource smoothing

Q.5 A project is represented by the network shown below and has the following data for Shraddha Ltd. **(14)**

Task	A	B	C	D	E	F	G	H	I
Optimistic time	5	18	26	16	15	6	7	7	3
Pessimistic time	10	22	40	20	25	12	12	9	5
Most likely tie	8	20	33	18	20	9	10	8	4

Determine the following:

1. Expected task times and their variance.
2. The earliest and latest expected coition times of each event.
3. The critical path.
4. The probability of an event occurring at the expected completion date if the original scheduled time of completing the project is 41.5 weeks.

OR

Draw network diagrams from, the following list of activities for Jeet Ltd.

Activity	**Predecessor activity**		
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
H	E,F	F	D,E,F

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Term End Examination February-2015

Course : Diploma in Operation Research **(DOR)** **Numerical Code: 0030**
Roll No.:_____
Subject : PERT & CPM **(DOR-04)** **Numerical Code: 0191**
Date : **21/02/2015**
Time : **03.00 to 06.00**
N.B. : All questions carry equal Marks. **Total Marks : 70**

Q.1 Describe the concept of decision Making. **(14)**

OR

Explain the decision tree approach in deacision making?

Q.2 State the types of environment under which decisions can be made? **(14)**

OR

Summarise EMV and EOL criteria

Q.3 Explain the techniques to deal with risk. **(14)**

OR

Explain sensitivity Analysis as a risk reducing measures in capital budgeting.

Q.4 Write Short note (any two) **(14)**

1. Expected opportunity loss
2. Maximum or Minimum
3. Criterion or Realism
4. Concept or decision making

Q.5 The probability distribution or Monthly sales of an item of Manan Ltd. is as follow. **(14)**

Monthly Sales (units)	0	1	2	3	4	5	6
Probabilities	0.01	0.06	0.25	0.30	0.20	0.10	0.06

The expense of carrying inventory (unsold during the month) is Rs.30 per unit per month and expense of unit shortage is Rs.70.

Define Optimum stock to minimize expected expense.

OR

Man Ltd. is considering to purchase one out of the two machines for production of a new product. The Investment in each machine will be Rs. 1,10,000 and the would give benefit of 12 years for each alternative, three estimates of cash flows are given Mostlikely, optimistic, and pessimistic.

	Machine A Rs.	Machine B Rs.
Cost price	1,10,000	1,10,000
Estimate of cash flow	-	-
Optimistic	33000	44000
Mostlikey	25000	20000
pessimistic	19000	1000

The cost of capital of the project is 14% which project is more risky? The annuity of Rs.1 at 14% for 12 years is Rs. 5.66
