Sr. No. of Question Paper : Your Roll No.....

Unique Paper Code : 62363324 (OC)

Name of the Paper : Operation Research Application (OR: SEC)

Name of the Course : B.A.(Programme) (admissions before 2019)

Semester : III

Duration : 3 Hours Maximum Marks: 75

Instruction for Candidates

1. Attempt any four questions
2. All questions carry equal marks
3. Show you working clearly in your answer

1. The Megacity Power Company wishes to schedule its work force for the coming month. Employees work in an 8-hour shift beginning at 8 a.m., 12 p.m., 4 p.m., 8 p.m. and 12 a.m. All but the late shift (12 a.m. to 8 a.m.) overlap the next shift by 4 hours. Based on past experience, the following number of workers will be needed during the time shown:

Hours	Workers required
12 a.m. – 8 a.m.	6
8 a.m. – 12 p.m.	10
12 p.m. – 4 p.m.	16
4 p.m. – 8 p.m.	18
8 p.m. – 12 a.m.	8

   How many workers should be scheduled to report for each of the five shifts if the company wishes to minimize its total work force? Formulate and solve this problem as a linear programming problem.

2. Define media and its different types. What is the difference between traditional and online media? What role do media play in our daily life?
3. Ram is planning to produce at least 2000 widgets on three machines. The minimum lot size on any machine is 500 widgets. The following table gives the pertinent data of the situation:

Machine	Cost	Production cost/unit	Capacity(units)
1	250	5	500
2	145	10	600
3	175	8	1000

   Formulate the problem as an integer programming problem, and find the optimum solution.

4. A truck can carry 20 tons of loads. Four types of products are to be loaded. Their per unit weights in tons and values in thousand of rupees are given below:

Type	Weights	Value/unit
A	1	20
B	2	30
C	3	50
D	4	85

   At least one unit of each type of load is to be shifted. Determine the loading which will maximize the value of the load.

5. A transport company has trucks available at four different localities A, B, C and D; the number of trucks at these localities is 5,10,7 and 3 respectively. The three stores at destinations P, Q and R require 5, 8 and 10 trucks respectively. Variable costs (hundred of rupees) of getting trucks to the destinations are given below. Find the optimum transportation cost.

From/To	P	Q	R
A	7	3	6
B	4	6	8
C	5	8	4
D	8	4	3

6. Write short notes on the following:
   (i) Simulation,
   (ii) Production scheduling Problem,
   (iii) Media Allocation Problem.