PMCAT304.1 - Elective-I - Operational Techniques Paper-IV

P. Pages : 2

GUG/W/18/11105

Time : Three Hours

‖ *32 1 4* ‖

Max. Marks : 80

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Notes : 1. All questions are compulsory and carry equal marks.
2. Draw neat and labelled diagram and use supporting data wherever necessary.
3. Avoid vague answers and write specific answers related to questions.

1. Either

a) Define operation Research. Explain about the significance of Research. **8**

b) Explain different phases of an operational Research study in detail. **8**

OR

c) Explain origin and development of operational Research. **8**

d) Explain with example about the Mathematical modelling of Real life problem. **8**

2. Either

a) What are the need, importance and limitations of quantitative technique. **8**

b) What do you mean by measures of central tendency? Give example for each. **8**

OR

c) Explain Decision Three. Write it's advantages and limitation. **8**

d) Consider the following decision theory problem. Which strategy should be adopted using **8**
   i) Minimax regret criteria.   ii) Laplace criteria.

Strategy	State of Nature		
	N_1	N_2	N_3
S_1	3000	7000	1500
S_2	4500	0	3000
S_3	2000	2000	3000

3. Either

a) What is linear programming? Write down General model of linear programming. **8**

b) A Manufacturer has two products P_1 and P_2, both of which are produced in two steps by **8**
   machine M_1 and M_2. The process time per hundred for the product on the machines are.

	M_1	M_2	Contribution (per 100 units)
P_1	4	5	10
P_2	5	2	5
Available hour	100	80	

The manufacturer is in a market upswing and can sell as much as he can produce of both
product formulate the problem on LP model and determine optimum product mix using
simplex method.

OR

c) What are the methods for finding a starting feasibility solution. Determine initial basic feasible solution by North- West corner rule. **8**

From \ To	i	ii	iii	iv	supply
A	2	3	11	7	6
B	1	0	6	1	1
C	5	8	15	9	10
Demand	7	5	3	2	

d) What is Assignment problem? Explain the special cases in Assignment problem in detail. **8**

4. Either

a) What is Inventory control? Write down objective and fermiology of Inventory control. **8**

b) A stockiest has to supply 12000 units of a product per year to his customer. The demand is fixed and known and the shortage cost is assumed to be infinite. The inventory holding cost is Rs. 0.20 per unit per month and ordering cost per order is Rs. 350 Determine. **8**
   i) Optimal lot Size.
   ii) Optimal number of orders.
   iii) Minimum total variable yearly cost.
   iv) Average annual total cost if cost per unit is Rs. 1.

OR

c) What do you mean by simulation? Explain Monte Carlo Method of simulation. **8**

d) Train arrive at yard every 15 minutes and the service time is 33 minutes. If the line capacity of the yard is to 4 train find. **8**
   i) The probability that the yard is empty.
   ii) The average number of trains in the System.

5. Solve all the questions.

a) Give scope and limitation of operational Research. **4**

b) Write a note on regression analysis. **4**

c) Explain in short about PERT method. **4**

d) Classify the MMI/ FIRO model. **4**

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