[6118]-42
M.B.A.
302-GC-12 : DECISION SCIENCE
(2019 Pattern) (Semester - III)

Time : 2½ Hours]　　　　　　　　　　　　　　　　*[Max. Marks : 50*

Instructions to the candidates:

　1)　Each question carries 10 marks.

　2)　Graph Paper will not be provided.

　3)　Use of non-scientific calculator is allowed.

Q1) **Solve any five of the following :**　　　　　　　　　　　　　　**[10]**

　a)　Differentiate between PERT and CPM.

　b)　Define Mutually Exclusive Events and Collectively Exhaustive Events.

　c)　Define Total Float in Network Diagram.

　d)　Define (M/M/1, Infinite, FIFO) in Queuing Theory.

　e)　Define Critical Path in Network Diagram.

　f)　Enlist the different elements of Queuing System.

　g)　List the different Probability Distributions.

　h)　Define Discrete Random Variable.

Q2) **Answer any two from the following :**　　　　　　　　　　　**[10]**

　a)　Find the initial basic feasible solution of following transporting problem for minimizing using Vogel's approximation method.

Destination					
Sources	I	II	III	IV	Capacity
A	20	6	25	15	50
B	17	13	16	17	50
C	5	21	19	23	100
	30	40	60	70	

　b)　Explain the role of Quantitative Techniques in Decision Making.

　c)　Describe the Process of Simulation and state the advantages and disadvantages of Simulation.

P.T.O.

Q3) **Answer any one from the following :** **[10]**

a) A farmer wants to decide which of the 3 crops he should plant. The farmer has categorized the amt. of rainfall as high, medium and low. Estimated 1000 fit is given below.

Rainfall	Estimated profit (in Rs.)		
	Crop A	Crop B	Crop C
High	8000	3500	5000
Medium	4500	4500	4900
Low	2000	5000	4000

Farmer wishes to plant one crop. Decide the best crop using :

i) Hurwickz Alpha criterion

ii) Laplace Criterion

iii) Mini-max Regret criterion

b) The rainfall distribution in monsoon is as follows :

Rain in cm.	0	1	2	3	4	5
Frequency	50	25	15	5	3	2

Simulate the rainfall for 10 days using the following random numbers:

67, 63, 39, 55, 29, 78, 70, 96, 78, 76 and also find average rainfall.

Q4) **Answer any one from the following :** **[10]**

a) It is observed that if a student works hard then chances' of passing an exam is 80%. A random sample of 10 students is selected. What are the chances that :

i) No student will pass is examination.

ii) All the students will pass the examination.

b) Mr. Rao the owner of readymade garments shop wishes to publish advertisement in two local daily newspapers, one in local language and one in English. The expected coverage through the advertisement is 1000 people and 1500 people per advertisement respectively. Each advt. in local newspaper costs Rs. 3000 and Rs. 5000 in English newspaper. He decides not to publish more than 10 advt. in local newspaper and wants to place at least 6 in English daily. The total advt. budget is Rs. 50000. Formulate the problem as LPP model.

Q5) **Answer any one from the following :** [10]

a) The activities of a project and estimated time in days for each activity is given below.

Activity	Duration
1-2	3
2-3	4
2-4	4
2-5	5
3-7	4
4-5	2
4-7	2
5-6	3
6-7	2

i) Draw network diagram.

ii) Calculate project duration and determine critical path.

b) Player A and B are playing with following matrix :

Player A	Player B				
	1	2	3	4	5
I	1	3	2	7	4
II	3	4	1	5	6
III	6	5	7	6	5
IV	2	0	6	3	1

Solve the following game by using dominance rule.

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