[6201]-3002
S.Y. M. B. A.
302 : GC - 12 : DECISION SCIENCE
(2019 Pattern)(Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:
1) *All questions are compulsory.*
2) *Each question carries 10 marks.*
3) *Figures to the right indicate full marks.*
4) *Graph Paper will be provided.*
5) *Use of non-scientific calculator is allowed.*

Q1) Solve any Five of the following.

[10]

a) Write a short note on Hungarian method/Flood's Technique to solve assignment problem.

b) Explain in brief Vogel's Apporoximation Method.

c) What do you understand as the Feasible Solution and Optimum Solution in case of an LPP?

d) Define Transition Probability in Markov chain.

e) State the condition for Balanced Transportation Problem.

f) Define Independent Events in Probability.

g) Define Probability.

h) Enumerate the techniques of Initial Feasible solution for Transportation Problem.

Q2) Answer any two from the following:

[10]

a) Determine the initial basis feasible solution to the following transportation problem by using NWCM.

Sources	Destination				Supply
	D_1	D_2	D_3	D_4	
S_1	19	30	50	10	7
S_2	40	8	15	18	9
S_3	30	20	20	25	18
Demand	5	8	7	14	

b) Write a short note on Markov chain.

c) Describe the steps in solving Assignment Problem

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

a) Maximize $z = 16x_1 + 8x_2$

Subject to:

$6x_1 + 4x_2 \geq 24$

$4x_1 + 2x_2 \leq 16$

$3.5x_1 + 3x_2 \leq 21$

$x_1, x_2 \geq 0$

b) In a cricket season for a one day match a bowler bowled 50 balls. The frequency distribution of runs scored per ball is as given below.

Runs/balls:	0	1	2	3	4	5	6
Number of balls:	15	10	10	4	8	1	2

` Simulate the system for 2 overs and find average runs given in 2 overs by him. Use the following random numbers: 88, 03, 05, 29, 28, 48, 65, 19, 55, 17, 37 and 82

Q4) Answer any one from the following: [10

a) A card is drawn from a well shuffled deck of 52 cards. Find the probability that

i) It is not a spade card
ii) It is a face card

b) A pair of dice is thrown. Find the probability of getting the sum.

   i)   More than nine

   ii) Mutiple of three

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

   a) Given is the following information regarding a project-

Activity	Preceding Activity	Duration
A	-	3
B	-	4
C	-	2
D	A,B	5
E	B	1
F	B	3
G	F,C	6
H	B	4
I	E,H	4
J	E,H	2
K	D,J	1
L	K	5

   i)   Draw a network for above project
   ii) Determine the critical path and duration of the project.

   b) In a bank on average every 15 minutes a customer arrives for cashing the cheques. The staff at payment counter on an average take 10 minutes to serve a customer.

   Calculate:

   i)   Probability that system is busy.
   ii) Average number of customers in bank.

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