Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF MANAGEMENT
END TERM EXAMINATION - JAN 2024

Semester : Semester V - 2021
Course Code : MAT2029
Course Name : Optimization Technique
Program : BBA

Date : 03-JAN-2024
Time : 1:00 PM - 4:00 PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **5 X 2M = 10M**

1. List out the applications of optimization techniques.
(CO1) [Knowledge]
2. What is an unbalanced transportation problem?
(CO2) [Knowledge]
3. What is the abbreviation of CPM & PERT?
(CO3) [Knowledge]
4. What is the objective of Sequence model?
(CO4) [Knowledge]
5. What is Payoff ? How many strategies in game theory?
(CO5) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **5 X 10M = 50M**

6. List the phases of Operations Research and explain them.
(CO1) [Comprehension]

7. A travelling salesman has to visit 5 cities. He wishes to start from a particular city, visit each city once and then return to his starting point. Cost of going from one city to another is shown below. You are required to rind the least cost route.

From City \ To City	A	B	C	D	E
A	∞	4	10	14	2
B	12	∞	6	10	4
C	16	14	∞	8	14
D	24	8	12	∞	10
E	2	6	4	16	∞

(CO1,CO2) [Comprehension]

8. The following table shows the jobs of a network alongwith their time estimates

Job	1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
a (days)	1	2	2	2	7	5	5	3	8
m (")	7	5	14	5	10	5	8	3	17
B (")	13	14	26	8	19	17	29	9	32

From the above information, you are required to
a) Construct a network diagram.
b) Determine the critical path and total project duration.

(CO3) [Comprehension]

9. We have seven jobs each of which has to go through the machine MI and M2 in the order M1M2. Processing time (in hours) are given below. Determine a sequence of these jobs that will minim ise the total elapsed time.

Job	1	2	3	4	5	6	7
Machine 1	3	12	15	6	10	11	9
Machine 2	8	10	10	6	12	1	3

(CO4) [Comprehension]

10. Determine which of the following two person zero sum games are strictly determinable and fair. Given the optimum strategy for each player in the case of strictly determinable games.

(a)

Player A \ Player B	B_1	B_2
A_1	−5	2
A_2	−7	−4

(b)

Player A \ Player B	B_1	B_2
A_1	1	1
A_2	4	−3

(CO5) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **2 X 20M = 40M**

11. A small maintainance project consists of the following jobs whose precedence relationships is given below

Activity	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Time (Days)	15	15	3	5	8	12	1	14	3	14

From the above information, you are required to
a) Construct a network diagram representing the project.
b) Compute the earliest event time and latest event time.
c) Determine the critical path and total project duration.
d) Computer total float and free float for each activity.

(CO4) [Application]

12. Solve the given pay-off matrix to find the value of the game

	Player B		
Player A		B_1	B_2
	A_1	8	-7
	A_2	-6	4

(CO5) [Application]