

12623

M.B.A. 2 Year 3rd Semester (CBCS) 2019-20

New Scheme Examination, December-2024

OPERATIONS RESEARCH

Paper-20IMG23C3

Time allowed : 3 hours]

[Maximum marks : 80

Note : This paper consists of two sections (Section-A and B). Section-A is compulsory and carrying questions of two marks each while Section-B consists of eight questions of sixteen marks each. The students shall be required to attempt four questions from Section-B selecting one question from each unit. All questions carry equal marks.

Section-A

1. Write short notes on the following : 8×2=16
 - (a) Convex Set
 - (b) Feasible Solution
 - (c) Monte Carlo Techniques
 - (d) Multiple Optimal Solutions
 - (e) Float
 - (f) Maximin Principle
 - (g) Birth and Death Process
 - (h) Saddle point

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Section-B

(4×16=64 marks)

Unit-I

2. Define Operations Research. Describe the scope and limitations of operations research.
3. Find the maximum value of $2x + y$ subject to the constraints

$x + 3y \geq 6$

$x - 3y \leq 3$

$3x + 4y \leq 24$

$-3x + 2y \leq 6$

$5x + y \geq 5$

$x, y \geq 0.$

Unit-II

4. Obtain the basic feasible solution of the following problem using Vogel's Approximation method :

Origin/ Distribution Centre	1	2	3	4	5	6	Availability
1	4	6	9	2	7	8	10
2	3	5	4	8	10	0	12
3	2	6	9	8	4	13	4
4	4	4	5	9	3	6	18
5	9	8	7	3	2	14	20
Requirement	8	8	16	3	8	21	

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5. Write short notes on :

- Stepping Stone Method
- Least Cost Entry Method

Unit-III

6. A Project consists of eight activities with the following time estimates :

Activity	Time (days)			
	Immediate Predecessor	Optimistic Time	Most likely time	Pessimistic time
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D & E	3	6	15
H	F & G	1	2	3

- Draw a PERT network.
- Find the expected time for each activity.
- Determine the critical path.
- What is the probability that the project will be completed in 22 days ?

7. Write short notes on :

- Decision-making under uncertainty and risk
- Bayesian Analysis

Unit-IV

8. (a) The pay-off matrix for a two-person, zero-sum game is given below. Find the best strategy for each player and the value of the game.

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

(b) Determine the solution of the following game :

		Player B		
		I	II	III
Player A	I	-2	15	-2
	II	-5	-6	-4
	III	-5	20	-8

9. Define Simulation. Explain the advantages and limitations of simulation.