



Avinashilingam Institute for Home Science and Higher Education for Women
Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD [now MoE]
Re-accredited with an 'A++' Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment II – April 2025
II Semester

Class: I MBA/I MBA (SF)/I MBA (IT&SM)
Major: Business Administration

Time: 2 hours
Max.marks:60

23MBAC14 / 24MBMC14 Applied Operations Research

Part A

Choose the correct answer

Course Outcomes:

1. Identify and develop operational research models from the verbal description of the real system. Further students would understand and apply the mathematical tools that are needed to solve optimization problems.
2. Demonstrate insight with respect to solution techniques namely transportation and assignment for resource and facility allocation.
3. Develop mathematical skills to analyze and solve network models arising from a wide range of applications.
4. Model a dynamic system as a queuing model and compute important performance measures.
5. Simulate the business scenario using random numbers and dynamic programming for model building.

Part A

6 x1=6

Choose the correct answer

1. Decision under uncertainty, which one of the following approach is not possible? **CO 3, K 2**
 - a. Expected Monetary Value
 - b. Maximin
 - c. Minimax
 - d. Hurwicz
2. Maximin criteria is a(n) criteria. **CO 3, K 1**
 - a. Optimistic
 - b. Neutral
 - c. Pessimistic
 - d. Based on decision
3. What does Kendall's notation in Queuing Theory represent? **CO 4, K 2**
 - a. The number of servers in a system
 - b. The type of service distribution in a queue
 - c. The arrival rate of customers in a queue
 - d. The service capacity of the system
4. Identify the odd one with respect to queuing theory **CO 4, K 2**
 - a. Shelving
 - b. Reneging
 - c. Jockeying
 - d. Balking
5. Simulation is a process.... **CO 5, K 1**
 - a. Solving the model
 - b. interpretation of the model
 - c. making a replica of an existing or a perceived situation of real life
 - d. finding the outcome of an event
6. What is the primary advantage of Dynamic Programming over traditional optimization methods? **CO 5, K 2**
 - a) It uses the divide and conquer method to solve problems
 - b) It requires less computational effort
 - c) It guarantees the optimal solution by considering all possible solutions
 - d) It reduces the number of variables in a problem

Part B

3 x6=18

Answer ALL Questions.

Answer should not exceed 400 words or two pages

- 7 (a) Write note on decision making under the conditions of certainty and risk. **CO 3, K 4**

- List out the terminologies in decision tree.
(or)
- 7 (b) Draw the decision tree for the following conditions. **CO 3, K 4**
 *Are you quitting your job-
 *If you leave your job, do you have another job proposal
 *Is it better?
 *Do you have enough savings?
 * Get new job & leave
 * Don't quit your job
- 8 (a) Distinguish between EOL and EVPI. **CO 4, K 3**
(or)
- 8 (b) What is the difference between Group Replacement and Individual Replacement in Replacement Theory? **CO 4, K 3**
- 9 (a) Brief about the Monte Carlo Simulation. **CO 5, K 3**
(or)
- 9 (b) Discuss the areas of application of Simulation in decision-making. **CO 5, K 2**

Part C

3 x12=36

Answer ALL Questions.

Answer should not exceed 800 words or four pages

- 10 (a) Find out the time required to complete the following project and the critical activities: **CO 3, K 6**

Activity	Predecessor	Optimistic (to)	Most Likely (tm)	Pessimistic (tp)
A	-	2	4	6
B	A	3	6	9
C	A	8	10	12
D	B	9	12	15
E	C	8	9	10
F	D, E	16	21	26
G	D, E	19	22	25
H	F	2	5	8
I	G	1	3	5

- i. Draw the project network.
 ii. Find the critical path.

(or)

- 10 (b) Compare the single channel and multi-channel queuing models **CO 4, K 4**
 11 (a) Find the optimal replacement policy in the following case: **CO 4, K 4**

Cost of the unit = Rs.10000

Year	1	2	3	4	5	6	7
Scrap Value in RS.	7000	5000	4000	3000	2500	2500	2500
Maintenance Cost in RS.	800	1200	2000	2800	3000	4100	4000

(or)

- 11 (b) Explain dynamic programming as an approach for optimizing multistage decision process. **CO 5, K 4**

- 12 Compulsory Quesiton: **CO 5, K 5**

Suppose that a decision maker faced with three decision alternatives and four states of nature constructs the following pay off table.

State of Natures	A1	A2	A3	A4
S1	5	10	18	25
S2	8	7	8	23
S3	21	18	12	21
S4	30	22	19	20

Determine the alternative to be chosen under :

- (a) Maximax, (b) Maximin, (c) Minimax regret (d) Equal likelihood (Laplace)

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Name of the Staffs:Dr. M.A. Vijaya/Dr.R.Hemavathy