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MMPO-001

MANAGEMENT PROGRAMME

(MP)

Term-End Examination

June, 2026

MMPO-001 : OPERATIONS RESEARCH

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

Note : (i) Attempt any **five** questions.

(ii) All questions carry equal marks.

1. What is an Operations Research model ?

Discuss the advantages and limitations of good operations.

2. What are the similarities and differences between the Transportation problem and the Assignment problem ? Explain.
3. In a departmental store, one cashier is there to serve the customers. And the customers pick up their needs by themselves. The arrival rate is 9 customers for every 5 minutes, and the cashier can serve 10 customers in 5 minutes. Assuming Poisson arrival rate and exponential distribution for service rate, find :
 - (a) Average number of customers in the system.
 - (b) Average number of customers in the queue or average queue length.

- (c) Average time a customer spends in the system.
 - (d) Average time a customer waits before being served.
4. What are the advantages and disadvantages of Monte Carlo simulation as a problem-solving technique ? Explain.
5. What is the cutting plane algorithm for integer programming ? Briefly describe the cutting plane method for solving an integer programming problem. Discuss the applications of dynamic programming in decision-making. How is it different from Linear Programming ?

6. Write short notes on any *four* of the following :

- (i) Travelling Salesman Problem
- (ii) Unbalanced Assignment Problem
- (iii) The $M/M/\infty$ Queuing Model
- (iv) $2 \times n$ Games
- (v) Degeneracy in LP Problem

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