

APPLIED OPERATIONS RESEARCH

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Post-optimality analysis studies a) Changes in demand b) Sensitivity of optimal solution c) Simulation methods d) ABC classification	K1	CO1
	2	A Pure Integer Programming problem means a) Some variables are integers, some continuous b) All decision variables are integers c) No variables are integers d) Only binary values allowed	K2	CO1
2	3	In EOQ model, the trade-off is between a) Ordering cost and holding cost b) Demand and lead time c) Purchase cost and shortage cost d) Ordering cost and purchase cost	K1	CO2
	4	In probabilistic inventory models, demand is a) Always constant b) Always zero c) Variable and uncertain d) Infinite	K2	CO2
3	5	In queuing notation (M/M/C), 'C' denotes: a) Capacity of system b) Number of servers c) Number of customers d) Service discipline	K1	CO3
	6	The most common discipline in queuing is a) LCFS b) FCFS c) SIRO d) Priority service	K2	CO3
4	7	In PERT, activity times are assumed to follow a) Normal distribution b) Exponential distribution c) Beta distribution d) Poisson distribution	K1	CO4
	8	Monte Carlo method is used for a) Linear programming b) Simulation of random processes c) Critical path calculation d) ABC analysis	K2	CO4
5	9	Quadratic programming deals with a) Linear objective & linear constraints b) Quadratic objective & linear constraints c) Non-linear objective & non-linear constraints d) Simulation-based optimization	K1	CO5
	10	Constraints in goal programming are expressed as a) Probabilities b) Goals and priorities c) Integer values only d) Random variables	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the steps involved in the Dual Simplex Method.	K4	CO1
	(OR)			
	11.b.	Using Integer Programming problem solve the following Maximize $Z=4x_1+3x_2$ subject to $x_1+2x_2 \leq 5$, $x_1, x_2 \geq 0$ and integers.		
2	12.a.	Explain the concept of ABC Analysis.	K2	CO2
	(OR)			
	12.b.	Derive the EOQ formula for a deterministic model without shortage.		
3	13.a.	Explain the M/M/1 queueing model.	K4	CO3
	(OR)			
	13.b.	Explain the main performance measures in queueing models.		
4	14.a.	Explain the following (i) Resource allocation (ii) Resource Levelling	K5	CO4
	(OR)			
	14.b.	Explain Monte Carlo Simulation.		
5	15.a.	Explain Non-linear Programming Problem (NLPP).	K5	CO5
	(OR)			
	15.b.	Explain Goal Programming with a simple example.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Write short notes on Post Optimal Analysis in Linear Programming.	K2	CO1
2	17	Explain Probabilistic Inventory Models.	K4	CO2
3	18	Explain the classification of queueing models with examples.	K4	CO3
4	19	Explain in detail Critical Path Method (CPM) and Program Evaluation and Review Technique (PERT) with differences.	K5	CO4
5	20	Explain the Kuhn–Tucker conditions and their role in solving Non-linear Programming Problems.	K5	CO5

Z-Z-Z END