PG – 570

II Semester M.B.A. (Day) Examination, November/December 2023
(CBCS 2014 – 15 Onwards)
MANAGEMENT
Paper – 2.6 : Quantitative Techniques and Operation Research

Time : 3 Hours | Max. Marks : 70

SECTION – A

Answer **any five** questions. **Each** question carries **five** marks. **(5×5=25)**

1. Explain the uses of Models in business.
2. Distinguish between analytical and simulation models.
3. Solve the following game.

		Firm B			
		B1	B2	B3	B4
Firm A	A1	15	35	25	5
	A2	10	20	5	0
	A3	20	50	10	5
	A4	25	55	15	20

4. Explain the essential features of queueing problem.
5. Find initial basic feasible solution for the following TP using lowest cost entry method.

		Destination				
		D1	D2	D3	D4	Supply
Source	A	11	13	17	14	250
	B	16	18	14	10	300
	C	21	24	13	10	400
Demand		200	225	275	250	

P.T.O.

6. What are PERT and CPM ? Explain with advantages and limitations.

7. With respect to simplex table, explain the following :
   a) Leading column
   b) Leading row
   c) Leading element.

SECTION – B

Answer **any three** questions. **Each** question carries **ten** marks. **(3×10=30)**

8. Solve the following assignment problem to maximise sales.

		Machines				
		A	B	C	D	E
Jobs	I	32	38	48	28	40
	II	40	28	24	21	36
	III	41	27	33	30	37
	IV	22	38	41	36	36
	V	29	33	40	35	39

9. There are six jobs each of which must go through three machines A, B and C in the order ABC, processing time in hours is given in the following table. Determine the optimum sequence and total elapsed time.

Machine/Job	1	2	3	4	5	6
A	8	3	7	10	5	4
B	6	4	8	2	1	7
C	8	7	6	9	10	9

10. Discuss the significance and scope of OR in modern business management.

11. Solve the following LPP, using the graphical method.

Min. $Z = 4x - 2y$

Subject to

$x + y \leq 14$

$3x + 2y \geq 36$

$2x + y \leq 24$

$x, y \geq 0$.

SECTION – C

Compulsory (Case Study) : **(1×15=15)**

12. The following table gives a list of activities and their estimates. Construct a network and find the critical path. What is the probability that the project shall be completed within a period of 15 weeks ?

Activities	Immediate Predecessor	t_0	t_m	t_p
A	–	2	4	10
B	–	3	4	5
C	A	1	2	3
D	A	4	6	14
E	B	4	5	12
F	C	3	4	6
G	D, E	1	1	8