

**MMSIM06 CP : 201 : 7447**  
**Management Science Paper:**  
**CP-201**

Time: Three Hours]

[Maximum Marks: 70

Note :-Attempt **FIVE** questions in all. All questions carry equal marks. Question No.1 is compulsory.

- 1.(a) Define management science.
- (b) Discuss the assumption of proportionality in the context of L.P.Ps.
- (c) What is the difference between slack and surplus variables?
- (d) What is degeneracy and unboundedness
- (e) Distinguish between the fixed order quantity system and periodic review system."
- (f) What do you understand by queuing structure?
- (g) Explain the Laplace principle of decision making 2x7=14
- 2 Discuss the role and scope of management science, explaining briefly the main phases of an operation research study. 14
- 3 Solve the following L.P.P.

Max.  $Z=2x_1+4x_2$

Subject to constraints

$$2x_1 + x_2 \leq 18$$

$$3x_1 + 2x_2 \geq 30$$

$$x_1 + 2x_2 = 26$$

where  $x_1, x_2 \geq 0$

14

4. Solve the following all-integer programming problem:

Solve the following L.P.P.

$$\text{Max. } Z = 3x_1 + 4x_2$$

subject to  $3x_1 + 2x_2 \leq 8$

$$x_1 + 4x_2 \leq 10$$

$x_1, x_2 \geq 0$  and integers.

14

5. Solve the following transportation problem:

Source	Destination				
	1	2	3	4	Supply
1	15	18	22	16	30
2	15	19	20	14	40
3	13	16	23	17	30
Demand	20	20	25	35	100

Is the solution optimal? If not, determine it.

14

6. (a) Distinguish between deterministic and probabilistic queuing models.  
 (b) Describe the role of queuing theory in managerial decision making. 6,8
- 7(a) For a small project of 12 activities, the details are given below. Draw the network and compute earliest occurrence time, least occurrence time, critical activities and project completion time.

Activity	A	B	C	D	E	F	G	H	I	J	K	L
Dependence:	-	-	-	B, C	A, C	E	E	D, F, H	E	I, J	G	-
Duration (days):	9	4	7	8	7	5	10	8	6	9	10	2

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- (b) What are the objectives of using Network Analysis?

10+4

