

22P244

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Name: .....

Reg.No: .....

**SECOND SEMESTER M.Com. DEGREE EXAMINATION, APRIL 2023**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P MCM2 C10 - MANAGEMENT SCIENCE**

(Commerce)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

**Part-A**

Answer any *four* questions. Each question carries 2 weightage.

1. What is Decision making?
2. What are the Characteristics of LPP?
3. What do you understand by simplex method?
4. Define inventory.
5. Explain the limitations of Queuing theory.
6. What is CPM?
7. What do you mean Market share analysis?

**(4 × 2 = 8 Weightage)**

**Part-B**

Answer any *four* questions. Each question carries 3 weightage.

8. Explain characteristics of management science.
9. What are the basic assumptions in Linear Programming Model?
10. What are the advantages and limitations of LP Model?
11. A and B each take out one or two matches and guess how many matches opponent has taken. If one of the players guesses correctly then the opponent has to pay him as many rupees as the sum of numbers of matches held by both the players, otherwise the payout is zero. Write down the pay-off matrix and obtain the optimal strategies for both the players.
12. The following table gives the activities in a construction project and other relevant information.

Activity :	1-2	1-3	2-3	2-4	3-4	4-5
Duration :	20	25	10	12	6	10

  - (a) Draw the network for the project.
  - (b) Find free, total and independent floats for each activity.Which are the critical activities?

13. A project consists of a series of tasks labelled P, Q, R, ..... X, having the following relation:

$$P < S, T; \quad Q, S < U; \quad R < V; \quad Q < W; \quad U, V < X$$

Task :	P	Q	R	S	T	U	V	W	X
Time :	23	9	22	17	25	18	19	4	10

Draw the network diagram. Find the time for completion of the project. Determine all the four float for each activity.

14. A repairman to be hired to repair machines which break down at an average rate of 6 per hour. The break down follows poisson distribution. The productive time of a machine is considered to cost Rs.20 per hour. The repairman, Mr. X and Y have been interviewed for this purpose. Mr. X charge Rs 10 per hour and he service breakdown machines at the rate of 8 per hour. Mr.Y demands Rs. 14 per hour and he services at an average rate of 12 machines per hour. Which repairman should be hired? (Assume 8 hour shift per day).

**(4 × 3 = 12 Weightage)**

### Part-C

Answer any *two* questions. Each question carries 5 weightage.

15. Explain the decision-making process under Markov Analysis.

16. Solve the following problem:

$$\text{Maximize } Z = 7X_1 + 5X_2$$

$$\text{Subject to } -2X_1 + X_2 \leq 2$$

$$X_1 - X_2 \leq 1$$

$$3X_1 + 4X_2 \leq 8$$

$$X_1, X_2 \geq 0$$

17. The following table gives the activities in a construction project and other relevant information.

Activity :	1-2	1-3	2-3	2-4	3-4	4-5
Duration :	30	35	15	17	6	10

(a) Draw the network for the project.

(b) Find free, total and independent floats for each activity.

Which are the critical activities?

18. Explain the usefulness of PERT and CPM techniques in decision making .

**(2 × 5 = 10 Weightage)**

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