BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Com.(BFA)-2024
Course Name – Decision Sciences
Course Code - MBF10104
(Semester I)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Match the term Constraints with the following alternatives-
   a) limitations b) requirements
   c) Balanced condition d) all of these

(ii) Define the objective of Linear programming maximisation model
   a) The objective function is maximised b) The objective function is maximised and then it is determined whether or not this occurs at an allowable decision
   c) The objective function is maximised over the allowable set of decisions d) All of these

(iii) Explain the reason behind positive or zero value of all variables in the solution of LPP
   a) An objective function b) Structural constraints
   c) Limited resources d) None of these

(iv) Identify the alternative below that is not a major requirements of LPP
   a) There must be alternative courses of action among which to decide b) An objective for the firm must exist
   c) The problem must be of the maximisation type d) resources must be limited

(v) Interpret the cause of unbounded feasible region formation.
   a) Arises from an incorrect formulation b) Means the objective function is unbounded
   c) Neither of them d) Both (a) and (b)

(vi) Identify the location of getting inter-sectional element at the time of making pivot in the simplex method
   a) Zj - Cj b) Optimal column
   c) Quantity column d) None of these

(vii) Describe the signal for optimality in a max model

a) Zj - Cj greater than or equal to zero for for all j
b) Zj is less than or equal to zero for all j
c) Cj – Zj greater than or equal to zero for all j
d) None of these

(viii) Interpret the meaning of existence of existence of slack variable S2 in the basic of second constraint with right hand side c2 in a non-degenerate optimal tableau

a) Original problem is infeasible
b) All of b2 is used up in optimal solution
c) Both the dual price and optimal value of the dual variable, for the second constraint, are zero
d) A better optimal value can be obtained by increasing b2

(ix) Define a model

a) A selective representation of realities
b) an abstraction
c) an approximation
d) All of these

(x) Write a variable that is found in maintenance cost function.

a) Time
b) function
c) Initial Investment
d) Resale value

(xi) Differentiate PERT from CPM.

a) PERT considers uncertainty in activity durations
b) CPM is used for complex projects only
c) PERT focuses on resource optimization
d) CPM is more suitable for short-duration projects

(xii) Select from the following that represents the longest path between start and the end nodes of a project.

a) Float of the activity
b) Dummy activity
c) Critical path
d) Path variance

(xiii) Distinguish between late start date and the early start date (or the late finish date and the early finish date)

a) variance
b) Free Float
c) total Float
d) Independent Float

(xiv) Select the term refers to the amount of time an activity can be delayed without delaying the project

a) Float
b) Slack
c) Duration
d) Lead time

(xv) Explain duality principle in Linear Programming

a) A relationship between the primal and dual problems
b) A relationship between the feasible and optimal solutions
c) A relationship between the objective function and the constraints
d) A relationship between the feasible region and the objective function

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Evaluate the concept of optimal strategy and value of the game. (3)

3. Describe Multiple Optimal Solution in Linear Programming. (3)

4. Describe the concept of duality in LPP and explain its applications (3)

5. Explain Infeasibility with an example (3)

6. Explain unbounded solution. (3)

OR

Explain two persons zero sum game. (3)

Group-C
(Long Answer Type Questions) 5 x 6=30

7. Discuss the steps in MODI method in Transportation Problem. (5)

8. Explain Degeneracy and evaluate it to avoid degeneracy. (5)

9. Describe the steps involved in Simplex algorithm (5)

10. Analyse various types of models for solving operations research problems. (5)

11. Explain the steps in PERT method and also write the formula in calculating project variance and estimated time. (5)

12. Analyse the game below using dominance property and compute optimum strategy. (5)

	Player B				
Player A	**Strategies**	**B1**	**B2**	**B3**	**B4**
	A1	7	6	8	9
	A2	-4	-3	9	10
	A3	3	0	4	2
	A4	10	2	-5	0

OR

Explain the concept of dominance used in simplyfying the solution of a rectangular game. (5)

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