

Roll No



**PRESIDENCY UNIVERSITY  
BENGALURU**

**SCHOOL OF MANAGEMENT  
MID TERM EXAMINATION - APR 2023**

**Semester :** Semester IV - 2021

**Course Code :** OE145

**Course Name :** Sem IV - OE145 - Optimisation Technique

**Program :** BBB,BBD,BBE

**Date :** 13-APR-2023

**Time :** 2:00PM - 3:30PM

**Max Marks :** 50

**Weightage :** 25%

**Instructions:**

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

**PART A**

**ANSWER ALL THE QUESTIONS**

**(10 X 1 = 10M)**

1. Operations Research uses models to help the management to determine its \_\_\_\_\_ scientifically.  
a) Policies (CO1) [Knowledge]  
b) Actions  
c) Both A and B  
d) None of the above
2. There is a great scope for \_\_\_\_\_ working as a team to solve problems of defence by using the Operations Research approach.  
a) Economists (CO1) [Knowledge]  
b) Administrators  
c) Statisticians and Technicians  
d) All of the above
3. Operations Research techniques helps the directing authority in optimum allocation of various limited resources, such as \_\_\_\_\_  
a) Men and Machine (CO1) [Knowledge]  
b) Money  
c) Material and Time  
d) All of the above

4. Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost minimization under certain constraints?  
a) Quailing Theory (CO1) [Knowledge]  
b) Waiting Line  
c) Both A and B  
d) Linear Programming
5. Graphical method can be applied to solve a LPP when there are only \_\_\_\_\_ variables.  
a) One (CO1) [Knowledge]  
b) More than One  
c) Two  
d) Three
6. An optimal solution is the \_\_\_\_\_ stage of a solution obtained by improving the initial solution.  
a) Third (CO2) [Knowledge]  
b) First  
c) Second  
d) Final
7. An objective function is maximized when it is a \_\_\_\_\_ function  
a) Passive (CO2) [Knowledge]  
b) Profit  
c) Cost  
d) None of the above
8. For solving an assignment problem, which method is used?  
a) Hungarian (CO2) [Knowledge]  
b) American  
c) German  
d) Both are incorrect
9. The solution of any transportation problem is obtained in how many stages?  
a) Five (CO2) [Knowledge]  
b) Four  
c) Three  
d) Two
10. If demand is lesser than supply then dummy demand node is added to make it a \_\_\_\_\_  
a) Simple problem (CO2) [Knowledge]  
b) Balanced problem  
c) Transportation problem  
d) None of the above

## PART B

ANSWER ALL THE QUESTIONS

(3 X 8 = 24M)

11. What are the main phases of operations research? Explain Briefly.

(CO1) [Comprehension]

12. Find the initial basic feasible solution for the TP by any two methods of your choice.

	D1	D2	D3	D4	Supply
O1	19	30	50	10	7
O2	70	30	40	60	9
O3	40	8	70	20	18
Demand	5	8	7	14	

(CO2) [Comprehension]

13. Using Hungarian Method, find the optimal solution for the given assignment problem.

	A	B	C	D	E
P	160	130	175	190	200
Q	135	120	130	160	175
R	140	110	155	170	185
S	50	50	80	80	110
T	55	35	70	80	105

(CO2) [Comprehension]

### PART C

#### ANSWER THE FOLLOWING QUESTION

(1 X 16 = 16M)

14. Briefly explain the formulation of Linear Programming Problem using Graphical Method.

$$\text{Maximize } Z = 5x + 4y$$

Subject to the constraints

$$6x + 4y \leq 24;$$

$$x + 2y \leq 6;$$

$$-x + y \leq 1;$$

$$y \leq 2;$$

where  $x \geq 0, y \geq 0$ .

(CO1) [Application]