Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 18

M.Sc. (Computer Science) (Sem.–3)

OPTIMIZATION TECHNIQUES

Subject Code : MSC-301

M.Code : 72103

Date of Examination : 12-12-22

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.**
2. **SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.**
3. **Use of non-programmable scientific calculator is allowed.**

SECTION-A

1. What is code optimization? Give example for any two optimization techniques.

2. Explain the Constant propagation code optimization technique with example.

SECTION-B

3. Write short notes on stochastic linear programming.

4. Maximize $Z = 2x_1 + 3x_2$

   Subject to $5x_1 + 7x_2 \leq 35$

   $4x_1 + 9x_2 \leq 36$, $x_1 \geq 0$ and integers.

SECTION-C

5. Explain the following with suitable examples:

   a) Design constraints

   b) Objective function.

6. List out various methods for finding an initial basic feasible solution for a transportation problem.

SECTION-D

7. State the characteristics of a constrained non-linear programming problem. Classify it.

8. A company produces two types of hats. Each hat of first type requires twice as much as labour time as second type. If all hats are of the second type only, the company can produce a total of 500 hats a day. The market limits daily sales of the first and second type to 150 and 250 hats. Assuming that the profits per hat are Rs.8 for type A and Rs.5 for type B, In the stated problem write:

   a) Design Vector

   b) Objective Function

   c) Constraints.

SECTION-E

9. What is Optimisation in Machine Learning?

10. What are Differentiable Objective Functions?

11. Define the gradient of the function.

12. Explain the importance of multi variable optimization.

13. Write short notes on stochastic linear programming.

14. State the multiplication rule of probability.

15. Define Unbalanced Transportation problem.

16. What do you understand from optimality in the simplex method?

17. What are the main features of Operation Research?

18. What is the importance of decision tree?

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.