

Course: B. Tech. Branch: Electronics Engineering Semester: V

Subject Code & Name: BTEXOE505C Optimization Techniques

Max Marks: 60

Date: 14.02.2023

Duration: 3 Hr.

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Solve Any Two of the following.	12
A) State any 4 applications of optimizations in engineering	(L1/CO1) 6
B) Explain in brief Classification of Optimization Problems	(L1/CO2) 6
C) Find the maximum of the function $f(X) = 2x_1 + x_2 + 10$ subject to $g(X) = x_1 + 2x_2^2 = 3$ using the Lagrange multiplier method.	(L1/CO1) 6
Q.2 Solve Any Two of the following.	12
A) State and prove the Kuhn – Tucker necessary conditions.	(L2/CO2) 6
B) Write a note on gradient vectors and write the situations that creates problems in evaluation of the Gradient.	(L1/CO1) 6
C) Write a note on convexity with neat diagram	(L1/CO1) 6
Q. 3 Solve Any Two of the following.	12
A) Explain the S^2 (Simplex Search) method in detail along with its advantages.	(L2/CO2) 6
B) Write a note on Symmetric Primal – Dual Relations and Dual simplex method.	(L2/CO1) 6
C) Minimize $f(x) = (1 - x_1^2) + (2 - x_2^2)$ using simplex search calculations.	(L1/CO1) 6
Q.4 Solve Any Two of the following.	12
A) What do you mean by dynamic programming. Write a note on multistage decision problem along with its types.	(L1/CO2) 6
B) Explain the computational procedure in dynamic programming.	(L1/CO1) 6
C) Explain in brief curse of Dimensionality in Dynamic Programming	(L2/CO1) 6
Q. 5 Solve Any Two of the following.	12
A) Explain the concept of cutting plane method with diagram.	(L1/CO2) 6
B) Explain the Gomory's Method for Mixed-Integer Programming Problems	(L2/CO1) 6
C) Explain in brief types of Random Search Methods	(L1/CO1) 6