

Code No: G2101/R13

M. Tech. I Semester Supplementary Examinations, JAN/FEB-2018

OPTMIZATION TECHNIQUES & APPLICATIONS

(Thermal Engineering)

Time: 3 hours

Max. Marks: 60

Answer any FIVE Questions
All Questions Carry Equal Marks

1. a Define the gradient of the function. Explain its importance in the multi variable optimization 6M
 b Write a brief note on optimization search methods 6M
2. a Define the gradient of the function. Explain its importance in the multi variable optimization 6M
 b Using the variable metric method, find the minimum of the function 6M
 $\text{Min } f(X) = x_1^2 - x_1x_2 + 3x_2^2$. Take initial point as [1,2].
3. a What is dynamic programming explain with suitable example? 6M
 b What are the application of dynamic programming 6M
4. a What is Newton-Raphson method 4M
 b Use the Newton-Raphson method with $x_0 = 2$ to find the root of the equation 8M
 $x^3 - x - 1 = 0$ correct to four decimal points
5. Explain about unconstrained Geometric programming and constrained Geometric Programming by considering a suitable example 12M
6. Explain Quasi-Newton method by considering an example 12M
7. a Define gradient of a function. Explain why is it called steepest ascent direction? 6M
 b Using Steepest decent method $\text{Min } f(x) = x_1^2 + x_2^2 - 2x_1 - 4x_2 + 5$ Take a starting point as a [0, 0]. Show calculations only for two iterations 6M
8. What is PI control? Explain First order and second order systems with PI control 12M
