

Code No: K0224

R07

Set No. 1

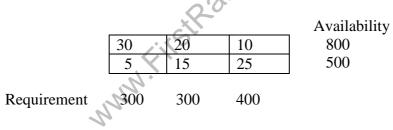
Max Marks: 80

IV B.Tech. II Semester Supplementary Examinations, July/August - 2017 OPTIMIZATION TECHNIQUES (Electrical and Electronics Engineering)

Time: 3 Hours

Answer any FIVE Questions All Questions carry equal marks ******

- a) Differentiate between single variable and multivariable optimization.
 b) Explain i) design vector ii) design variables and iii) feasible region.
- 2. a) Find the maxima and minima, if any of $f(x) = \frac{x^4}{(x-1)(x-3)^3}$
 - b) Explain relative and global minima and maxima for a single variable optimization problem.
- Use simplex method to solve the following LP problem minimize Z=5x+6y subject to the following constraints 2x+5y≥1500 3x+y≥ 1200 and x, y≥0
- 4. a) With the help of an example discuss unbalanced transportation problem.b) Solve the following transportation problem.



- 5. Find the minimum of $f=\lambda^5-5 \lambda^3-20 \lambda+5$ by quadratic interpolation method.
- 6. Minimize $f(x_1, x_2) = x_1 x_2 + 2x_1^2 + x_2^2 + 2x_1x_2$ starting from the point $x_1 = \begin{cases} 0 \\ 0 \end{cases}$ by steepest descent method.

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- 7. Construct the ϕ_k function, according to
 - a) Interior and
 - b) Exterior penalty function methods and plot its contours for the following problem. Maximize f=2x Subject to 2≤x≤10
- 8. Solve the following LPP by dynamic programming approach. Max Z= $3x_1+4x_2$, Subject to $2x_1+x_2 \le 40$ $2x_1+5x_2 \le 180$ $x_1, x_2 \ge 0$.

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