

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1721205

Date: 12/07/2012

Subject Name: Hydro System Engineering and Management

Time: 10:30 am – 13:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|-----|--|----|
| Q.1 | Maximize $Z = 10A + B + 2C$ Subject to constraints
$A+B-2C \leq 10$
$4A + B + C \leq 20$
$A, B, C \geq 0$ Use Simplex method. | 14 |
| Q.2 | (a) Define: SlackVariable, Surplus variable, Objective function, Unbounded solution. | 07 |
| | (b) Discuss the Assumptions made in Linear programming. | 07 |
| | (b) Explain Dynamic Programming and it's characteristics with merits and demerits. | 07 |
| Q.3 | (a) Explain the Primal-Dual concept of dual LP-model | 07 |
| | (b) Explain Kuhn-Tucker conditions and Langrangian multiplier | 07 |
| Q.3 | (a) Explain Big –M method in detail. | 07 |
| | (b) Write dual of
Maximize $Z = 3a - 2b$ subject to constraints
$a \leq 4, b \leq 6, a + b \leq 5, -b \leq -1, a, b \geq 0$ | 07 |
| Q.4 | (a) Explain the concept of system and applications of system Engineering in the field of water resources. | 07 |
| | (b) Write short note on Artificial Neural Network | 07 |
| Q.4 | (a) Discuss the limitations of linear programming. | 07 |
| Q.4 | (b) Explain Gomory's cutting plane method. | 07 |
| Q.5 | (a) Discuss use of space and peck rule for reservoir operation. | 07 |
| | (b) Classify the models by nature of environment, behavior and method of solution. | 07 |
| Q.5 | (a) Explain How non-linear function can be made linear. | 07 |
| | (b) Write short note on simulation modeling. | 07 |
