M.E. First Semester (Civil Engineering (Construction Engineering & Management)) (CGS)

# 13064 : Quantitative Methods in Construction Engineering : 1 CM 03

P. Pages : 2 **AW - 3514**

Time : Three Hours * 0 7 3 5 * Max. Marks : 80

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Notes : 1. Answer **Three** question from Section A and **Three** question from Section B.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.

## SECTION – A

**1.** a) State the queuing & simulation models briefly. **4**

b) Maximize, $P = 30\ x_1 + 40x_2$ **9**

Subject to $2x_1 + x_2 \leq 10$

$x_1 + x_2 \leq 7$

$x_1 + 2x_2 \leq 12$

$x_1, x_2 \geq 0$

**OR**

**2.** a) Explain shortly about operation research. **4**

b) Maximize, $P = 70\,x_1 + 50\,x_2$ **9**

Subject to $4x_1 + 3x_2 \leq 240$

$2x_1 + x_2 \leq 100$

$x_1, x_2 \geq 0$

**3.** a) What do you mean by transportation model? **4**

b) Solve the numerical by transportation problem. **10**

| To / From | A | B | C | supply |
|---|---|---|---|---|
| 1 | 4 | 3 | 8 | 300 |
| 2 | 7 | 5 | 9 | 300 |
| 3 | 4 | 5 | 5 | 100 |
| Demand | 200 | 200 | 300 | |

**OR**

**4.** a) What do you mean by assignment model? **4**

b) Solve by Assignment method. **10**

| | I | II | III | IV |
|---|---|---|---|---|
| 1 | 13 | 4 | 7 | 6 |
| 2 | 1 | 11 | 5 | 4 |
| 3 | 6 | 7 | 2 | 8 |
| 4 | 1 | 3 | 5 | 9 |

5. a) Explain the types of simulation modeling. 6

b) Explain the inventory management system. 7

**OR**

6. a) Explain briefly queuing theory. 6

b) Explain briefly the Replacement theory. 7

**SECTION – B**

7. a) Explain in detail time value of money. 6

b) What do you mean by capital budgeting? 7

**OR**

8. a) Describe in brief "Break even analysis". 7

b) Explain in detail investment decisions under risk and uncertainty. 6

9. a) Explain the importance of managerial economics. 6

b) State the objectives of business firms. 7

**OR**

10. a) State the concept used in Business decisions. 6

b) Explain in detail the social responsibility of private Business. 7

11. a) What do you mean by cost plus pricing? 7

b) Explain in detail multiple product pricing. 7

**OR**

12. a) What do you mean by competitive bidding of price? 7

b) Explain with example Equi-Marginal principle. 7

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