| - | 450 | - | APPL | - |
|---|------|---|------|-----|
| | 60 | | O | 6.3 |
| | C) C | | 23 | 27 |
| | | | | |

(Pages: 3)

Name.....

Reg. No.....

SECOND SEMESTER M.B.A. DEGREE EXAMINATION, APRIL 2014

(2010 Scheme)

M.B.A. 2.5-MANAGEMENT SCIENCE

Time: Three Hours

Maximum: 36 Weightage

Part A

Answer all the questions.

Each question carries 1 weightage.

- 1. What is shadow pricing?
- 2. What are the uses of integer programming?
- 3. Write a note on crashing.
- 4. What do you mean by payoff tables?
- 5. Write a note on STORM.
- 6. What are the limitations of simulation?



 $(6 \times 1 = 6 \text{ weightage})$

Part B

Answer any six questions.

Each question carries 3 weightage.

- 7. Briefly explain the scope and uses of linear programming.
- 8. Write a note on the methods of dynamic programming.
- 9. Differentiate between PERT and CPM.
- 10. How the problem of degeneracy arises in transportation problem?
- 11. Elucidate the features of simulation.
- 12. Explain the features of EXCEL SOLVER.

Turn over

13. A company has 3 plants and 3 warehouses. The cost of sending a unit from different plants to the warehouses, production at different plants and demand at different warehouses are shown in the following cost matrix table;

| Plants | Warehouses | A | В | C | Production |
|--------|------------|-----|-----|----|------------|
| X | | 8 | 16 | 16 | 152 |
| Y | | 32 | 48 | 32 | 164 |
| Z | | 16 | 32 | 48 | 154 |
| Demand | | 144 | 204 | 82 | |

Determine a transportation schedule, so that the cost in minimized. Assume that the cost in the cost matrix is given in thousand of rupees.

14. Enumerate and explain the steps in multiple objective programming.

 $(6 \times 3 = 18 \text{ weightage})$

Part C

Answer any two questions. Each question carries 6 weightage.

15. Find the maximum value of f = 10x + 8y subject to

$$2x + 3y \le 120$$

$$-5x + 4y \le 200$$

$$x \ge 0$$
 $y \ge 0$.

16. For the following data, draw the network diagram, and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

| Activity | Preceding | Time (we | eks) | Cost (Rs. 000s) | |
|----------|-----------|-------------------|------------------|-------------------|------------------|
| | Activity | Normal Program | Crash Program | Normal Program | Crash Program |
| A | - | 2 | 2 | 5 | 5 |
| В | A | 5 | 3 | 11 | 21 |
| C | A | 2 | 1 | 7 | 16 |
| D | B,C | 4 | 2 | 8 | 22 |
| E | В | 3 | 2 | 9 | 18 |
| F | D,E | 3 | 3 | 9 | 9 |

17. A bakery shop keeps stock of a popular brand of cake. Previous experience indicates the daily demand as given here;

| Daily demand | 295.0 | 0 | 10 | 20 | 30 | 40 | 50 |
|--------------|-------|------|------|------|------|------|------|
| Probability | 0000 | 0.01 | 0.20 | 0.15 | 0.50 | 0.12 | 0.02 |

Consider the following sequence of random numbers;

R. No. 48, 78, 19, 51, 56, 77, 15, 14, 68, 09

Using this sequence, simulate the demand for the next 10 days. Find out the stock situation if the owner of the bakery decides to make 30 cakes every day. Also, estimate the daily average demand for the cakes on the basis of simulated data.

 $(2 \times 6 = 12 \text{ weightage})$