

C:81799

(Pages : 4)

Name.....

Reg. No.....

FOURTH SEMESTER B.B.A. DEGREE EXAMINATION, APRIL/MAY 2015

(U.G.—CCSS)

Complementary Course

BB IVC 04—MANAGEMENT SCIENCE

Time : Three Hours

Maximum : 30 Weightage

Part A

*This part contains **three** bunches of questions carrying equal weightage of 1.
Each bunch has **four** questions. Answer all **twelve** questions.*

A. Choose the correct answer from the bracket :

1 Decision variables are ———.

- (a) Controllable. (b) Uncontrollable.
(c) Parameters. (d) None of the above.

2 Graphical method of LP problem uses :

- (a) Objective function equation.
(b) Constraint equations.
(c) Linear equation.
(d) All of the above.

3 The number of non-negative variable is a basic feasible solution to an $m \times n$ transportation problems is :

- (a) mn . (b) $m + n + 1$.
(c) $m + n - 1$. (d) $m + n$.

4 Which of the following criteria is not applicable to decision making under risk ?

- (a) Maximin. (b) Maxima.
(c) Minimax. (d) Minimize the expected loss.

B. Fill in the blanks :

5 ——— is usually represented by a number with which the course of action is associated.

6 ——— is an example of a deterministic model.

7 The objective of network analysis is ———.

8 The sequence of critical activities in a network is called ———.

C. Answer in *one* sentence :

9 What is unbounded solution ?

10 What is optimum solution of a transportation problem ?

Turn over

- 11 State minimax theorem.
- 12 What is independent float ?

(12 × ¼ = 3 weightage)

Part B

*Answer all **nine** questions in one or two sentences.
Each question carries a weightage of 1.*

- 13 What is an analogue model ?
- 14 State any four applications of operations research.
- 15 What are the limitations of LPP ?
- 16 Define surplus variable with an example.
- 17 What is a transportation problem ?
- 18 Define decision tree.
- 19 State major limitation of game theory.
- 20 What is a dummy activity and when it is needed ?
- 21 What is float ?

(9 × 1 = 9 weightage)

Part C

*Answer any **five** questions.
Answer not to exceed **one** page each.
Each question carries weightage of 2.*

- 22 A firm manufactures two types of products A and B and sells them at a profit of Rs. 2.00 on type A and Rs. 3.00 type B. Each product is processed on two machines G and H. Type A requires one minute of processing time on G and two minutes on H. Type B requires one minute on G and one minute on H. The machine G is available for not more than six hours and forty minutes while machine H is available for ten hours during any working day. Formulate the problem as an LPP and find how many products of each type should the firm produce each day in order to get maximum profit.
- 23 Explain the characteristics of operations Research.
- 24 Explain PERT and its importance in network analysis.
- 25 Explain the difference between expected opportunity loss and expected value of perfect information.

26 Solve the following pay :—

	Player A				
	9	3	1	8	0
Player B	6	5	4	6	7
	2	4	3	3	8
	5	6	2	2	1

27 Solve graphically :

$$\text{Maximize } Z = 4x_1 - 2x_2$$

$$\text{Subject to } x_1 + x_2 < 14$$

$$3x_1 + 2x_2 > 36$$

$$2x_1 + x_2 < 24$$

$$x_1, x_2 > 0.$$

28 Find initial feasible solution to the following transportation problem.

	D1	D2	D3	Supply
O1	4	5	2	30
O2	4	1	3	40
O3	3	6	2	20
O4	2	3	7	60
Demand	40	50	60	

(5 × 2 = 10 weightage)

Part D

Answer any two questions.

Each question carries a weightage of 4.

29 Determine the optimal transportation plan from the following table giving the plant to market shipping costs and quantities required at each market and available at each plant.

Plant	W1	W2	W3	W4	Availability
F1	22	40	14	16	100
F2	42	32	20	24	80
F3	16	24	36	18	140
Requirement	60	50	70	80	

Turn over

30 A project has the following time schedule :—

Activity	Time of Weeks
1 – 2	4
1 – 3	1
2 – 4	1
3 – 4	1
3 – 5	6
4 – 9	5
5 – 6	4
5 – 7	8
6 – 8	1
7 – 8	2
8 – 9	1
8 – 10	8
9 – 10	7

Construct a network diagram and compute : (a) TE and TL for each event ; (b) Float for each activity ; (c) Critical path and its duration.

31 Describe the methods which are useful for decision making under uncertainty. Illustrate each by an example.

(2 × 4 = 8 weightage)