

SVKM's NMIMS
School of Distance Learning

Programme: PGDSCM

Academic year: 2012 – 2013

Subject: Decision Analysis & Modeling

Semester: IV

Course New

Marks 70

Date: 15.07.2012

Time: 3.00 p.m. to 6.00 p.m.

Instructions:

Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer book, which is provided for their use.

NB:

1. All 4 questions are compulsory.
2. Candidates should attempt questions as per the internal options available.
3. Use of non programmable Calculator, Graph Paper (Area under the Normal curve) permissible.

Q.1. Attempt any two out of three

(10 Marks)

- a) Explain different approaches in Decision Making under uncertainty.
- b) What do you mean by logistic regression? What are advantages of CART?
- c) Describe the steps involved in testing heteroscedasticity.

Q.2. Attempt any two out of five

(10 Marks)

- a) Explain Ford Fulkerson's method of network flow.
- b) Write short note on Transshipment problem.
- c) Explain cutting plane method in detail.
- d) Explain how games can be solved using the dominance property.
- e) What are the advantages and limitations of simulation process?

Q.3. Attempt any three out of five

(30 Marks)

a) Solve by Graphical Method

Maximize $z=4x+3y$

Subject to

$4x+5y \leq 120$

$2y \leq 40$

$6x+3y \leq 100$

Where $x, y \geq 0$

b) Solve the following transportation problem to have optimal solution.

	A	B	C	D	E	Supply
P	13	6	9	6	10	13
Q	8	2	7	7	9	15
R	2	12	5	8	7	15
S	5	7	4	9	8	9
Demand	10	16	7	6	3	

c) Solve the game given below and find the value of the game

(1	7	2)
(6	2	7)
(5	1	6)

d) A company dealing with newly invented telephonic device is faced with the problem of selecting the following strategic

- (i) Manufacture the device itself.
- (ii) To be paid on royalty basis by another manufacturer.
- (iii) Sell the rights for its invention for a lump sum.

The profit in thousands of rupees that can be expected in each case and the probability associated with the sales volumes are shown in the following table.

Event	Probability	Manufacture itself	Royalties	Sell the Rights
High Demand	0.2	100	40	20
Medium Demand	0.3	30	25	20
Low Demand	0.5	-10	15	20

- 1) Represent the company's problem in the form of a decision tree.
- 2) Extend the diagram further if the company manufactures itself and sales are medium or high, it has the opportunity of developing a new version of its telephone.

