Time: 3 Hrs **Marks: 100**

Note:

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat labeled diagrams wherever necessary.
4. Use of simple calculator is allowed.

Section – 1

Q.1. Attempt <u>any four</u> from the following. **(20)**

a) Pratik owned 300 shares of a company with face value Rs.10 each. Find his annual dividend if the company declared 12% dividend.

b) Mr. Nene received Rs. 4,30,272 after selling shares of a company at market price of Rs. 720, through Sharekhan Ltd., with brokerage @0.4%. The face value of the share is Rs. 10.Find the number of shared he sold.

c) Samar invested Rs 2,00,000 in a Mutual Funds on 20th January, 2011 when the NAV was Rs 54.8. He redeemed the units on 30th April, 2011 with NAV of Rs 70.2. There was no entry load or exit load. Find the number of units purchased, the net gain and the rate of return.

d) Rohit invested an amount of Rs 18,000 on 14th Feb 2011 when N.A.V was 75.1092 with an entry load of 2.25% of the NAV. He sold all the units on 17th September 2011 with NAV of Rs. 97.2516 without exit load. Find his total gain and rate of return.

e) Anita invested Rs. 49,572 in equity shares of Rs. 100 each at market price of Rs. 162 each. After receiving 11% dividend, she sold shares at Rs. 180 each. She paid brokerage of 2% on each transaction. Find her percentage return.

Q.2. Attempt <u>any four</u> from the following. **(20)**

a) In how many ways, 5 distinguishable balls can be put in 3 different boxes?

b) In how many ways can the letters of the word “FATHER” be arranged? How many of these words begin with A and end with E?

c) In how many ways can a chairman, vice-chairman and a secretary of a board of 8 members be selected from amongst themselves?

d) There are 8 players in a team. Find the number of ways in which these can be arranged such that the best and the worst players are never together.

e) Draw a graph for the system and mark the feasible region, if it exists.
$x + y - 3 >= 0$
$2x + y - 4 >= 0$

Section – 2

Q.3. Attempt <u>any four</u> from the following. **(20)**

a) Explain the types of averages.

b) Find the arithmetic mean for the following data, representing marks of 80 students.

Marks	0-10	10-20	20-30	30-40	40-50
No.of Students	12	13	21	19	15

c) Explain the merits and demerits of Arithmetic Mean.

d) Find the median for the following data:

Class interval	5-9	10-14	15-19	20-24	25-29	30-34	35-39
Frequency	8	18	27	21	10	8	7

e)Find the mode for the following data:

Income in Rs.	2000-4000	4000-6000	6000-8000	8000-10000	10000-12000
No.of Persons	16	34	60	37	13

Q.4. Attempt <u>any four</u> from the following. **(20)**

a) A box contains 5 white balls and 3 black balls. If 5 balls are selected from the box, what is the probability that 3 of them are white?

b) Prove: If A and B are two events associated with an experiment, then probability of occurrence of events A or B or both A and B is given by P(A U B)=P(A)+P(B)-P(A intersection B)

c) A box contains 5 red and 4 blue balls and another box contains 4 red and 7 blue balls. A ball is selected at random from the first box and without noting the color put in the other. A ball is then drawn from the second box. What is the probability that it is blue?

d) Find the approximate probability distribution for X from the following frequency distribution:

X	1	3	4	5	8	10
Frequency	19	33	42	61	32	13

e) If X is a number appearing on the uppermost face of a fair dice, find E(X) and V(X).

Q.5. Attempt <u>any four</u> from the following. **(20)**

a) Explain the components of decision making.

b) Given the following pay off table, obtain the optimum decision using

i) Maximax criterion ii) Maximin criterion

Course of Action	State of nature			
	S1	S2	S3	
A1	2500	2500	2500	
A2	4000	3500	2000	
A3	2500	2000	1200	

c) Given the following pay off table, find optimal decision using criterion i) maximin ii) Laplace solution

Course of Action	State of nature			
	S1	S2	S3	
A1	25	85	95	
A2	40	0	60	
A3	65	30	55	

d) The following table is pay off of four alternative plans under each of five possible states of nature:

	S1	S2	S3	S4	S5
A1	36	24	15	24	28
A2	36	24	34	40	30
A3	28	24	19	28	28
A4	32	24	19	28	30

i) obtain Laplace solution

ii) Find the regret table and obtain minimax solution.

e) For the past 50 days, the sales from bakery have been as follows.

Daily Sales	80	100	120
No. of Days	15	25	10

The bakery's production cost is Rs. 8 per loaf and sales price is Rs. 12 per loaf. The unsold breads are destroyed on the same day. Draw a pay off table and determine the optimal act using EMV criterion.