Time: 3 Hours Maths Marks: 100

Note: 1) Use of simple calculator is allowed.
2) Graph paper will be supplied on request.
3) Answer to the both sections should be written separately in the same answer book.

Section-I

Q.1 Attempt any **four** questions out of following.

(A) Mr. Akbar invested Rs. 75375 to purchase equity shares of a company at market price of Rs. 250 through brokerage firm, charging 0.5% brokerage. What is the number of shares did Mr. Akbar purchased? **[5]**

(B) Mr. Anand brought 500 shares of face value Rs.10 each at the market price of Rs.30 each. If the annual dividend distributed was at the rate of 12%, find Mr. Anand's total dividend and rate of return on investment. **[5]**

(C) Mr. Sachin invested Rs.10000 on 7^{th} of every month for 6 months in a SIP scheme of a mutual fund. The NAV's on these dates were Rs. 42.36, 47.68, 49.87, 52.48, 40.25 and 39.16 respectively. There was same entry load of 1.25% for all these months. Find average price by rupee-cost- average method and compare it with arithmetic mean of prices. **[5]**

(D) Miss. Pooja invested Rs. 30,000 in T.I.G.E.R. mutual fund scheme when the NAV was Rs210.47 and redeemed all the units when the NAV was Rs.290.50.What was the total gain? What was the rate of return on investment? There was no loads. **[5]**

(E) Mr. Vikrant invested some money to purchase 400 units of Taurus Discovery Stock, at NAV of Rs.14.84 with entry load of 2.25%. Later he decided to sell the units when NAV was Rs. 24.56, with exit load of 0.5%. Find his gain in the transaction. **[5]**

Q.2 Attempt any **four** questions out of following.

(A) To produce a unit of product I and II, we require 2 and 5 units of raw material A and, 3 and 2 units of raw material b respectively. While product I result into a profit margin of Rs.25 per unit, product II results into a margin of Rs.35 per unit. In all 400 units of raw material A and 600 units of raw material B are available every day. Formulate the L.P.P. **[5]**

(B) How many 4 lettered different words can be formed by using the letters a, b, c and d? When (i) repetition is allowed and (ii) repetition is not allowed. **[5]**

(C) In how many ways can 2 boys and 2 girls be selected from a group of 6 boys and 5 girls? **[5]**

(D) Solve the following L.P.P. graphically:

Minimize $Z = 13x + 15y$

subjected to

$3x + 4y \geq 360$

$2x + y \geq 100$

with $x \geq 0,\ y \geq 0$ **[5]**

(E) In how many different ways can the letters of the word "FRIDAY" be arranged such that first letter of word is "F" and last word is "Y". **[5]**

Section-II

Q.3 Attempt any **four** questions out of following.

(A) The frequency distribution below represents the time in seconds needed to serve a sample of customers by cashiers at Dollar Discount store in December 1996. Find the mean and median. **[5]**

Time (in seconds):	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No of Customers:	6	16	21	29	25	22	11	7

(B) Calculated the combine mean of the two group for the following data and find which group is more consistent. **[5]**

	Group I	**Group II**
Number	100	200
Mean	50	100
S.D.	9	25

(C) The rainfall recorded at two cities is given below.

Rainfall in city A:	30	28	34	28	27	31
Rainfall in city B:	32	26	40	25	28	34

Calculate the coefficient of range. Which city has greater variation in rainfall? **[5]**

(D) Calculate standard deviation from mean for the following distribution. **[5]**

Daily profit (in Rs.)	100-140	140-180	180-200	200-220	220-240	240-260
No. of Shops	14	45	52	82	32	23

(E) What do you understand by central tendency? State it's important. **[5]**

Q.4 Attempt any **three** questions out of following.

(A) Determine the probability of the following events in drawing a card from a standard desk of 52 cards. (a) a seven (b) A black card (c) An ace or a king **[5]**

(B) From the past experience it is known that A can solve 3 examples out of given 5 and B can solve 4 examples out of given 7. An example is given to both of them to solve independently. Find the probability that a) the example remains unsolved b) the example is solved. **[5]**

(C) Students of a class were given a test in Economics & Accountancy. Of these students 20% failed in Economics, 15% failed in Accountancy and 5% failed in both. Find the chance that a student selected at random a) failed in at least one of the two subjects. b) failed in only Accountancy c) passed in both the subjects. **[5]**

(D) In a game of throwing a fair dice, A wins Rs.60/- if a 6 is thrown. He gains Rs.30/- if the dice show 2 or 4 and he loses Rs.30/- if odd numbers occurs on the uppermost face of the dice. Find the expected gain of A? **[5]**

(E) Define the following term with example.
(i) Mutually exclusive events (ii) exhaustive events

Q.5 Attempt any **three** questions out of following.

(A) The following table is pay off of four alternative plans under each of five possible states of nature. Obtain (i) Maximax criterion (ii) Laplace solution. **[5]**

	S_1	S_2	S_3	S_4	S_5
A_1	36	24	15	24	28
A_2	36	24	34	40	30
A_3	28	24	19	28	28
A_4	32	24	19	28	30

(B) A farmer wants to decide which of the three crops he should plant on his farm. The profit from each is dependent on the rainfall during the season. He has categories the rainfall as substantial, moderate or light. He estimates his profit for each crop as shown in the table:

Course of action	Rainfall		
	Substantial	moderate	Light
Crop A	7000	3500	1000
Crop B	2500	3500	4000
Crop C	4000	4000	3000

Depending on projection for the coming season, he estimates the probability of substantial rainfall as 0.2 of moderate rainfall, 0.3 and that of light rainfall as 0.5. Determine the optimal decision as to which crop to plant using EOL criteria. **[5]**

(C) A newspaper boy has the following probability distribution of selling a fashion magazine.

No. of Copies sold	11	12	13	14	15
Probability	0.10	0.15	0.20	0.25	0.30

Each magazine costs him Rs.30/- and is sold at Rs. 50/-.The newspaper boy cannot return the unsold copies. Determine optimum number of copies the newspaper boy should order using EMV criterion. **[5]**

(D) An XYZ company is bringing out a new type of toy. The company is attempting to decide whether to bring out a full, partial or smallest product line. The company has three levels of demands good, fair and poor. The pay off matrix is as under (profit in Rs.) Suggest best decision using Minimax regret criteria. **[5]**

State of Demand	**Courses of Act.**		
	Full	**Partial**	**Smallest**
Good	8000	7000	5000
Fair	5000	4500	4000
Poor	-2500	-1000	0

(E) Write a short note on decision tree. **[5]**