Marks:100

Time: 3hrs.

Note:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Graph papers will be provided on request
4. Use of simple six function calculator is allowed.

(20)

Q. 1   **Attempt the following (Any Four)**

(a) Reema sold the 350 shares at a market price of ₹150 per share. She had to pay brokerage 0.8% Find the amount she received.

(b) Rahul invested ₹20,000 in a share whose market value is ₹40 and face value is ₹10. If he receives dividend at the rate 12 %. Find the amount of the dividend.

(c) A sum of ₹75,500 was invested in a mutual fund when N.A.V of ₹82. Find No. of Units Purchased if entry load is 1.5%. Also, find the current value of his investment if current N.A.V is ₹95.

(d) Ayushi invested ₹18,000 in a mutual fund when the N.A.V was ₹ 210.47 and redeemed all units when N.A.V was ₹290.50 .There was no entry or exit load. What was the total gain and rate of return?

(e) An investor joined SIP scheme for a MF under which he would invest ₹1500 for 4 months. If the NAV for each month are ₹75, ₹60, ₹25 and ₹50. Find the average unit cost occurred to him using the Rupee Cost averaging Method.

(20)

Q.2   **Attempt the following (Any Four)**

(a) Solve the following Linear Programming Problem graphically

Minimize $Z : 7x + y$

Subject to constraints $x + 4y \geq 4$

$$3x + y \geq 3$$
$$x \geq 0 \ y \geq 0$$

(b) Solve the following Linear Programming Problem graphically

Maximize $Z : 2x + 5y$

Subject to constraints $x + y \leq 5$

$$3x + y \geq 9$$
$$x \geq 0, y \geq 0$$

(c) Formulate the following Linear Programming Problem.

A printing company prints two types of magazine A and B. The company earns ₹25 and ₹.35 on each copy of magazine A and B respectively. The magazine is processed on three machines. Magazine A requires 2 hours on machine I, 4 hours on machine II, and 2 hours on machine III. Magazine B requires 3 hours on machine I, 5 hours on machine II, 3 hours on machine III. Machine I, II, III are available for 30,50and70 hours per week respectively. Formulate the LPP to maximize the total profit of the company.

(d) How many different 5 digit number can be formed from digits 1,2,3,4,5,6, none of the digits being repeated in any one of the numbers so formed.

(e) In how many ways can a student choose six out of nine questions if
(i)he does not know the answer for the first question
(ii)the first two questions are compulsory

Q.3   **Attempt the following (Any Four)**   (20)

(a) Write merits and demerits of Mean

size	50-55	55-60	60-65	65-70	70-75	75-80
No. of Students	30	20	30	35	10	25

(b) Calculate 7th deciles and 85th percentiles for the following data

(c) Draw a histogram for the following data and locate mode graphically.

Age in years	25-30	30-35	35-40	40-45	45-50
No of Person	16	24	40	32	10

(d) Find the standard deviation and its coefficient from the following data.

Class –Interval	0-10	10-20	20-30	30-40	40-50
Frequency	15	20	40	20	5

(e) Find out Mean Deviation from mean and its coefficient for the following data.

X	10	11	12	13	14
f	3	12	18	12	13

Q.4   **Attempt the following (Any Four)**   (20)

(a) Define the following terms with suitable examples
(1) An Experiment   (2) Sample Space

(b) A card is drawn at random from a well-shuffled pack of cards. Find the probability that it is (i) ace of spade (ii) a red card.

(c) If $P(A \cup B) = 5/6$, $P(A') = 1/3$, $P(B) = 1/2$.
Find (I) $P(B')$ (II) $P(A)$ (III) $P(A \cap B)$

(d) If the letters of the word " FRIDAY " be arranged randomly , what is the probability that the arrangement (I) begins with letter "F" (II) begins with letter "F" and end with letter "R"

(e) The following table shows a probability distribution of a random variable x

X	-2	-1	0	1	2	3
P(x)	0.1	0.2	0.20	0.3	0.15	0.05

Find (i) $P(x \leq 1)$ (ii) $P(x=2 \text{ or } 3)$ (iii) $E(x)$.

Q.5   **Attempt the following (Any Four)**   (20)

(a) Explain the following terms
(i) Decision Maker (ii) States of nature

(b) For the following pay-off table, find optimal decision using criterion
(I) Maximax   (II) Maximin   (III) Laplace

Course of Action	State of Nature			
	S_1	S_2	S_3	S_4
A_1	57	24	37	50
A_2	24	28	32	13
A_3	12	34	26	44

(c) Find the optimal decision using regret table and Minimax Regret Criterion from the following data

Course of Action	State of Nature		
	S_1	S_2	S_3
A_1	5	10	18
A_2	8	22	8
A_3	21	18	12
A_4	30	7	19

(d) Find out best decision using EMV criterion.

Course of Action	State of Nature		
	S1	S2	S3
A1	50	70	100
A2	30	50	20
A3	120	90	130
Probability	0.3	0.5	0.2

(e) Draw decision tree for the following pay off table & determine the best possible act from it.

Act \ Event	S1	S2	S3
A1	29	32	30
A2	16	40	42
A3	0	24	48
Probability	0.25	0.45	0.3

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