Q.P. Code :19436

[Time: 3 Hours] **[Marks:100]**

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicates marks allotted.
3. Graph papers will be provided on request.
4. Use of simple non-programmable calculator is allowed.

Section - I

Q.1 Attempt **Any Four** from the following:

A) If the market price of a share with face value Rs.100 is Rs.130, how many shares of the company can be bought for Rs.3263 , brokerage being 0.4%. **[05]**

B) Smooth Writing Industry issued some shares of face value Rs.10 each. A dividend of Rs. 7500 was declared by the company at 2.5% per share. Find number of shares issued by the company. **[05]**

C) Neil purchased 1200 units of a mutual fund by investing Rs.60000. if the entry load was 2% , find NAV on the date of purchase. **[05]**

D) Nihar invested Rs.40000 in a mutual fund on 14-2-2012 when its NAV was Rs. 13.65. a dividend of Rs.3 per unit was given on 20-4-2012. Afterwards he sold all the units on 20-8-2012 when NAV was Rs. 16.85. Find his gain if there is no entry and exit load. **[05]**

E) An investor joined the SIP scheme for a mutual fund under which he 5 would invest Rs. 15000 for 5 months. If the NAVs for each month are Rs. 42.6, Rs.45,Rs. 47,Rs.47.5 and Rs. 60 , find the average cost using Rupee cost averaging method, the entry load being 2.5% throughout for these months. **[05]**

Q.2 Attempt **Any Four** from the following:

A) From 4 professors and 6 students, a committee of 4 is to be formed. In how many ways the committee can be formed such that it contains only one professor. **[05]**

B) How many numbers of 5 digits can be formed using the digits 1,2,3,4,5,6 such that **[05]**
   i) no digit is repeated
   ii) repetition of digits is allowed

C) How many ways out of 11 members of a cricket team choose a Captain, Vice-captain and wicket-keeper from among themselves? **[05]**

D) Solve the linear programming problem graphically. **[05]**
Min $z = 10x+7y$
Subject to: $2x+y \geq 2$,
$x+3y \geq 3$,
$x,y \geq 0$

E) A cracker manufacturer produces two types of crackers, rockets and bombs packed in boxes of hundreds in its two factories. Factory I performs the basic assembly operation. Factory II performs the finishing operation. For financial reason, Factory I has only 180 hours available per week and factory II has 120 hours available. Factory I needs 3 hours on each box of rockets and 10 hours on each box of bombs. Factory II needs 6 hours on box of rockets and 4 hours on box of bombs. The profit of the company is Rs.45 per box of rockets and Rs.55 per box of bombs. Formulate the LPP to maximize the profit. **[05]**

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SECTION- II

Q.3 Attempt Any Four from the following: [05]

A) Find the median and the fifth decile for the following frequency distribution:

Class Interval	5-10	15-20	25-30	35-40
frequency	16	14	13	17

B) Write merits and demerits of mean and mode. [05]

C) Draw a histogram and hence locate the mode graphically for the following distribution of marks: [05]

Marks	20-30	30-40	40-50	50-60
No. of students	11	15	24	14

D) From the following frequency distribution, calculate the standard deviation: [05]

X	5	6	7	8	10
frequency	3	7	4	2	4

E) For the following data, find the combined mean. Also find which group has more variation. [05]

	Group I	Group II
Number of articles	70	90
Mean	75	82
Variance	16	49

Q.4 Attempt **Any Four** from the following:

A) Define the following terms with examples: [05]
i) Complementary event ii) sample space

B) Two unbiased dice are thrown. Find the probability that [05]
i) Number on first die is less than number on second die.
ii) Sum of numbers on the two dice is 8.

C) If $P(A)= {}^1/_2$, $P(B)= 1/3$, $P(A \cup B) = 1/6$. Find $P(A')$ and $P(A \cap B)$. [05]

D) The following table shows a Probability Distribution of a Random Variable X. [05]

X	-1	0	1	2	3
P(X)	0.1	0.25	0.25	0.2	0.2

Find (i) $P(X>1)$ (ii) $E(X)$ (iii) $V(X)$

E) Four cards are to be selected from a pack of well shuffled 52 playing cards. Find the probability that [05]
i) All are back
ii) Only one is king

Q.5 Attempt **Any Four** from the following:

A) For the following pay off table, suggest the best decision by using, **[05]**
i) Maximax criterion ii) Maximin criterion iii) Laplace criterion

nature / action	SI	S2	S3	S4
A1	57	24	37	50
A2	24	28	32	13
A3	12	34	26	44

B) Draw a decision tree for the following decision making problem and suggest the best decision: **[05]**

nature / action	S1	S2	S3
A1	34	20	18
A2	14	16	12
Probability	0.2	0.3	0.5

C) Define the following along with examples: **[05]**
i) Acts
ii) States of Nature

D) The following is demand distribution of a certain product: **[05]**

No. of units demanded	10	11	12
probability	0.35	0.40	0.25

The product is sold at Rs. 100 per unit with cost price Rs. 70 per unit. Prepare a payoff tables and decide the best decision. The unit not sold is wasted.

E) For the following pay off table, suggest the best decision by EOL method **[05]**

nature / action	S1	S2	S3
A1	14	16	10
A2	12	15	16
A3	20	18	14
Probability	0.4	0.3	0.3

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