

TOTAL MARKS:- 75

DURATION:- 2½ HOURS

INSTRUCTIONS:-

- (1) All the questions are compulsory.
- (2) Graph papers will be provided on request.
- (3) Use of simple non-programmable calculator is allowed.

SECTION-I

Q.1 Attempt any 3 from the following:

- A An investor received Rs.1,14,655 after selling RNRL shares through Sharekhan Ltd. Sharekhan Ltd. charged brokerage of 0.3%. If 500 shares were sold, what was the market price of one share? (5)
- B Sum of Rs.12042 was invested in Rs.10 shares of Ispat Ltd. at the market price of Rs.60 each. The company declared 20% dividend on it. After 1 year the shares were sold for Rs.105 each. The brokerage of 0.35% was charged in both the transactions. Find the total gain or loss, if any. (5)
- C Mr. Naik invested Rs.75000 in a mutual fund on 15th April,2006 at an NAV of Rs.15 with no entry load. As NAV increased to Rs.60 in Jan., 2007, he decided to redeem, all the units. If the exit load was 2.25% on NAV, what was the total amount received? (5)
- D A person invested Rs.10000 on 10th of every month for 4 months in a SIP of a mutual fund. The NAVs on these dates were Rs.34.26, 46.12, 39.34 & 49.57 respectively. There was same entry load of 2.25% for all these months. Find the average price, including the entry load, using rupee cost averaging method. (5)

Q2 Attempt any 3 from the following:

- A An urn contains 5 red & 6 green balls of identical size. Four balls are selected at random from the urn. How many selections will have : (i) exactly one red ball, (ii) at most one red ball. (5)
- B How many words can be formed from the letters of the word 'COMBINE'? How many of them will (i) start & end with a vowel, (ii) have a vowel at the middle most position? (5)

OPTIMACS

- C Solve the following L.P.P. by graphical method: (5)

Maximize $z = 2x + y$, subject to $2x + 3y \leq 12$, $x + y \leq 5$, $x \geq 0$, $y \geq 0$.

- D Two types of food packs, P_1 & P_2 to be mixed in the fodders at a cattle farm (5)
are available, both containing vitamins V_1 , V_2 & V_3 . A cattle needs 40 mg of V_1 , 120 mg of V_2 & 60 mg of V_3 per meal. The packet P_1 contains 20 mg of V_1 , 40 mg of V_2 & 60 mg of V_3 & P_2 contains 10 mg of V_1 , 60 mg of V_2 & 10 mg of V_3 . Cost of these food packets are Rs.30 & Rs.20 respectively. Formulate the L.P.P.

SECTION-II

- Q.3 Attempt any 3 from the following:

- A Calculate arithmetic mean & mode for the following data: (5)

Age (in years)	25-35	35-45	45-55	55-65	65-75	75-85
No. of persons	5	20	37	25	10	3

- B Draw cumulative frequency curve for the following data & hence obtain median & 2 quartiles from it. (5)

Daily wages in Rs	200-400	400-600	600-800	800-1000	1000-1200	1200-1400
No of workers	8	15	22	15	13	7

- C Calculate standard deviation & coefficient of variation from the following data: (5)

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No of students	3	7	12	10	4	2

D Calculate quartile deviation & its coefficient from the following data: (5)

Daily expenditure	20-30	30-40	40-50	50-60	60-70
No. of families	14	23	27	21	15

Q.4 Attempt any 3 from the following:

A Three unbiased coins are tossed. Find the probability of getting: (i) at least 2 heads, (5)
(ii) exactly one head.

B A committee of 4 is to be formed from 3 boys & 4 girls. What is the probability that (5)
the committee consists of at least 2 boys?

C The probability that A can hit a target is 0.4 & the probability that B can hit a target (5)
is 0.3. If both A & B try to hit the target independently, find the probability that
(i) the target remains unhit, (ii) the target is hit.

D From the following probability distribution, find : (i) $P(x < 0)$, (ii) $E(x)$, (iii) $V(x)$. (5)

X	-2	-1	0	1	2
P(X)	0.05	0.12	0.45	0.28	0.10

Q5 Attempt any 3 from the following:

A From the following pay off table, determine the best possible act by using (5)
(i) maximin criterion, (ii) maximax criterion, (iii) Laplace criterion.

Event	E_1	E_2	E_3
Act			
A_1	17	16	13
A_2	15	18	19
A_3	20	14	18
A_4	19	20	18

B Prepare opportunity loss table from the following pay off table & determine the best possible act by using minimax regret criterion. (5)

Event \ Act	E ₁	E ₂	E ₃
A ₁	50	38	40
A ₂	-10	8	80
A ₃	8	40	60

C The following is the demand distribution of roses. (5)

No of roses demanded	15	20	25
Probability	0.3	0.5	0.2

Each rose is purchased at Rs.6 & is sold at Rs.10. If all the unsold roses are worthless at the end of the day, prepare the pay-off table & determine the best decision, using EMV criterion.

D Draw decision tree for the following pay off table & determine the best possible act from it. (5)

Event \ Act	S ₁	S ₂	S ₃
A ₁	25	30	18
A ₂	-15	40	15
A ₃	18	35	35
Probability	0.2	0.5	0.3
