

1. All questions are compulsory in each section.
2. From each question attempt any two sub-questions out of 3.
3. Bracketed figures to the right indicate marks.
4. Graph papers will be provided on request.

SECTION-I

Q.1 a) Mrs. George purchased 640 shares of APLEX Company at a market price of Rs. 320 each with face value Rs. 100 each she received a dividend at 12% per annum. Later at the end of the year she sold all the shares at Rs. 410 each.

She paid 1.25% brokerage in each transaction. Find

1. The total amount invested.
2. Total dividend received.
3. Total Gain
4. Percentage Gain

[6]

b. Amol invested Rs. 30,240 to purchase shares from NISKON Company at a market price of Rs. 120 each by paying broakerage of 0.8%. When the company declared a dividend of 7.5% he received a total dividend of Rs. 1875/-

- i) The number of shares he purchased
- ii) The face value of a share.

[6]

c) Mr. Kiran invested Rs. 16,000 in Reliance Diversified Power sector Fund at NAV Rs. 23.23 on 01/01/2011. He received a dividend @ Rs. 2 per unit on 05/03/2012. On 10/05/2012 he redeemed all the units at an NAV Rs. 24.25. Find Mr. Kiran's total gain. Find the rate of return. There is no load in any transaction.

[6]

Q.2 a) In how many ways the letters of the word "PRECAUTION" can be arranged to form the new word so that

- i) the word begins with a vowel
- ii) the letters R and T are together

iii) the word ends with C.

[6]

b) Solve the following Linear Programming problem graphically.

Minimize $Z = 3x + 2y$

Subject to

$$5x + y \geq 10$$

$$x + 4y \geq 12$$

$$x + y \geq 6$$

$$x \geq 0 \quad y \geq 0$$

[6]

c) A machine is used for producing two products A and B. Product A is produced by using 4 units of chemical salt and 2 units of chemical mixture. Product B is produced by using 2 units of chemical salt and 3 units of chemical mixture. Only 1000 units of chemical salt and 1500 units of chemical mixture are available. The profit on product A is Rs. 30 per unit and on B is Rs. 20 per unit. Formulate the linear programming problem.

[6]

SECTION - II

Q.3 a) Find the average profit earned by a shop from the following data.

Profit in (Rs. '000) per months	No. of shops
40 - 50	4
50 - 60	8
60 - 70	15
70 - 80	20
80 - 90	13
90 - 100	10

Draw a less than cumulative frequency curve and hence locate median graphically.

[6]

data.

Class-interval **No. of students**

0 - 20	6
20 - 40	8
40 - 60	14
60 - 80	18
80 - 100	9
100 - 120	5

[6]

- c) For 200 workers from factory A, the arithmetic mean and standard deviation of daily wages are Rs. 400 and Rs. 10 respectively. For 150 workers from factory B the Corresponding figures are Rs. 350 and Rs. 20 respectively. Find the combined arithmetic mean and standard deviation of wages if both the groups are taken together.

[6]

Q.4 a) A Card is drawn at random from a pack of 52 well shuffled playing cards
Find the probability that the card drawn is :-

- i) A face card
- ii) A hearts card or a king card
- iii) A black card
- iv) A spade card

[6]

- b) A problem in statistics is given to three students Anil, Ajay and Sanjay whose chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ respectively. Find the probability that :
- i) none of them solves it.

- ii) Atleast one of them solves it.

[6]

- c) For the following probability distribution obtain i) $P [x > 1]$ ii) $[-1 \leq x \leq 1]$

- iii) Expected value of x
- iv) Variance of x .

[6]

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

Q.5 a) Given the following pay-off table, find the optimal decision using the

criterion :-

- i) Maximim ii) Laplace iii) Minimax Regret criterion

[6]

Pay - off table

Course of Action	State of nature		
	S ₁	S ₂	S ₃
A ₁	25	85	95
A ₂	40	0	60
A ₃	65	30	55

- b) ABC manufacturing company is evaluating four alternative investment options whose returns are based on the state of economy. Following is pay-off matrix with probabilities of different events. Using decision tree approach determine the expected monetary value for each act and suggest best alternative action.

[6]

Profit in Rupees (Acts)	State of Economy		
	Fair	Good	Better
A ₁	1000	3000	6000
A ₂	500	4500	6800
A ₃	0	5000	8000
A ₄	- 4000	6000	8500
Probability	0.2	0.5	0.3

- c) The demand pattern of the pav-bhaji plates in a canteen is as follows :-

No. of plates	0	10	20	30	40
Probability	0.10	0.10	0.20	0.40	0.20

If the preparation cost is Rs. 50 per plate and the selling price is Rs. 70 per plate, any plate unsold at the end of the day can be disposed of at

Rs. 35 per plate. How many plates should the canteen make to maximise