Shri S. H. Kelkar College of Arts, Commerce and Science, Devgad

F.Y.B.Com. SEMESTER-I Examination-November 2023

Course: Mathematical and Statistical Techniques-I | **Course Code: UBCOMFSI.6**

Maximum marks: 100 | **Duration: 3Hrs**

Instructions:

All questions are compulsory and carry equal marks

Figures to the right indicate full marks

Graph paper will be supplied on demand

Use of non-programmable calculator is allowed

Section-I

Q.1 Attempt any four of the following **20**

a) A small investor decides to buy 140 shares at market price RS.25 per share and brokerage is 0.8%. Calculate the amount required for the transaction

b) Find the number of shares sold for RS.74,700 by a company, if the market value of each share is RS.150 and brokerage is 0.4%

c) An investor bought 500 shares of Finolex Cables Ltd. With face value RS.2 and his rate of return is 0.8%, when dividend declared by company is 60%. Find the market rate of shares at time of purchase

d) An investor invested RS.1205 in a mutual fund when NAV was RS.400 and entry load is 2.5%. Find the number of units received by the investor

e) Explain systematic Investment Plan with suitable example

Q.2 Attempt any four of the following **20**

a) Find n if 1) $4(n_{P_4}) = n_{P_5}$ 2) $n_{P_3} = n_{P_4}$

b) 4 boys and 5 girls are made on stand in line for dance competition. How many different arrangements can be done so that no two boys together?

c) Find the number of distinct permutation of letter of word SURROUNDINGS'

d) Solve LPP by graphically $Max\ Z = 5x + 10y\ \ Subject\ to\ 5x + 8y \leq 40; 3x + y \leq 12;$ $x \geq 0, y \geq 0$

e) Three different kinds of food A, B and C are to be considered to form a weekly diet.The minimum weekly requirements for diet fats, carbohydrates and proteins are 12, 30 and 20 units respectively. One Kg, of food A has 2, 16 and 4 units respectively of these ingredients and one kg of food B has 6, 4 and 3 units respectively whereas one kg of food has C 1, 5 and 7 kg of these ingredients. If cost per kg of food A is RS.75 per kg , of Food B is RS. 80 and for food C is RS.60 per kg. Construct the problem to minimise the cost

Section-II

Q.3 Attempt any four of the following **20**

a) Find the mean of the following

X	5	8	10	12	14
f	4	8	13	21	10

b) Find D_1, D_4 *and* D_7 *for* 8, 5, 9, 2, 4, 7, 8, 1, 2, 3, 15, 10, 3, 6, 14, 12, 4, 11, 8.

c) Calculate range and coefficient of range of 90, 50, 72, 69, 85, 100, 73, 85, 93.

d) Find the mean deviation from mean of data which represent height of 7 students

168, 164, 172, 169, 178, 173, 173.

e) Find the standard deviation of

X	-1	0	1	2
f	2	4	3	1

Q.4 Attempt any four of the following **20**

a) One card is drawn from pack of 52 cards. Find the probability that the card drawn is heart or queen.

b) Two dice are rolled. Find the probability that sum of the number are divisible by 2 or 3

c) A box contain 2 white, 3 red and 4 green balls. Three balls are drawn at random from the box. Find the probability that it is i) all green ii) at least one is green

d) Explain probability distribution of random variable and write down it for number on uppermost face of die.

e) Find E[x] and Var[X] for

X	1	2	3	4
P(x)	0.2	0.1	0.3	0.4

Q.5 Attempt any four of the following **20**

a) Explain types of decision making environments.

b) For the following payoff table find the best decision using EMV criterion, with probabilities 0.1, 0.7, 0.2 respectively.

States of Nature	A_1	A_2	A_3
S_1	25	-10	-125
S_2	400	440	400
S_3	650	740	750

c) Explain Expected Opportunity Loss with suitable example.

d) Distinguish between Optimistic criterion and Pessimistic criterion.

e) Construct decision tree for the following market survey

Demand	Probability		Return from Sales	
	A	B	A	B
High	0.4	0.3	50	80
Medium	0.3	0.5	30	60
Low	0.3	0.2	10	50