F.Y.B.Sc.(CS) (Sem-I) April-2023

Descriptive Statistics and Introduction to Probability **QP 00000274**

[Time:2.30 Hrs] [Marks:75]

Please check whether you have got the right question paper.

N.B:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Students answering in the regional language should refer in case of doubt to the main text of the paper in English.

Q1. Attempt *any four* of the following (20M)

A. Consider the following data which gives weight of students in kg

52.5,59.5,49.5,52.9,57.4,52.9,64.7,51.8,61.3,71.4,50.7,73.5,58.7,61.8,62.8,56.6,69.0,56.4,62.8,47.8,55.4,69.9,48.1,51.2,62.5,57.1,64.3,45.6,64.8,60.9,57.2,56.8,50.5,63.4,49.2,61.2,56.6,67.6,61.7,45.1

(i) obtain the number of classes

(ii) class width

(iii) frequency distribution

(iv) cumulative frequency distribution

B. What is frequency distribution? Explain frequency distribution for discrete variable

C. Find missing frequency, given that the mean is 27.25

Classes	0-10	10-20	20-30	30-40	40-50
Frequency	5	20	22	18	-

D. Explain any two types of relative measures of dispersion with example.

E. Find the median for the following data.

Daily wagesin Rs.	400-500	500-600	600-700	700-800	800-900	900-1000
No. of workers	4	6	20	10	5	5

F. Explain different methods of representing frequency distribution graphically with example

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Q2. Attempt *any four* of the following (20M)

A. From the information given below compare skewness of two groups

Group	Group1	Group2
Mean	54	52
Median	52	55
SD	10	12

B. Calculate Karl Pearson's coefficient of skewness for the following data

Daily wages	400-500	500-600	600-700	700-800	800-900
No. of workers	8	16	20	17	3

C. What is moment? Define central moments and raw moments.

D. Marks scored in English(X) and logic(Y) are recorded as follows

X	74	77	74	73	79	76	82	72	75	78	77	78	76	76
Y	65	72	70	69	72	70	70	70	73	75	77	65	67	72

Draw Scatter plot and conclude about correlation between them.

E. Define skewness and explain absolute measures and relative measures.

F. A ball is rolled down a hallway and its position is recorded at five different times. Use the data given in table shown below to predict the location of the ball at 12 seconds.

Time(seconds)	1	2	4	6	8
Position(meters)	9	12	17	21	26

Q3. Attempt *any four* of the following. (20M)

A. Explain term Permutations and Combinations

B. state multiplication theorem for two events

C. If a pair of unbiased coins is tossed obtain probability of occurrence of (i) singlehead (ii)more than one head (iii) at least one tail

D. The letters of the word 'EQUATION' are arranged randomly. what is the probability that an arrangement (i) starts and ends with vowel (ii) hasall vowels together

E. write the sample space for following experiment

(i) coin is tossed twice

(ii)Twenty laptops' sets are checked and number of defective sets is noted

(iii) A two-digit number is formed from the digits 1,3,5 using each digit only once.

(iv) A student appears for examination then possible outcomes of result

(v)Dice is thrown till 6 appears on uppermostface

F. Two dice are thrown simultaneously. Find the probability that the sum being 6 or same number on both dice

Q4. Attempt *any three* of the following. (15M)

A. An integer is chosen from 1 to 100. Find the probability that is multiple of 5 or perfectsquare.

B. Three persons X, Y, Z are being considered for the appointment as the manger for a company whose chance of being selected for the post are 4/9,1/3, and 2/9 respectively. The probabilities that bonus scheme will be introduced if X, Y, Z become manager are 3/10,4/5,1/2 respectively.

C. Find the median for the following frequency distribution

X	11	12	13	14	15	16	17	18	19
Frequency	8	10	11	16	20	22	18	9	6

D. In a moderately asymmetrical distribution, the values of mode and mean are 32.1 and 35.4 respectively. Find the median

E. Data values are:
42,53,65,63,61,77,47,56,74,60,64,68,45,55,57,82,42,35,39,51,65,55,33,76,70,50,52,54,45,46,25,36,59,63,83. Represent stem and leaf plot.

F. Two sets of candidates are competing for the positions on the board of directors of a company. The probabilities that the first and second sets will win are 0.6 and 0.4 respectively. If the first sets wins the probability of introducing a new product is 0.8 and thecorresponding probability if the second set wins is 0.3.What is the probability that a new product will be introduced?