MORNING

[Total No. of Questions: 09]   0 3 OCT 2023   [Total No. of Pages: 3]
Uni. Roll No. ....

Program: B.Tech. (Batch 2018 onward)
Semester: 4
Name of Subject: Probability and Statistics
Subject Code: BSIT-101
Paper ID: 16232
Scientific calculator is Allowed

Detail of allowed codes/charts/tables - Normal table is allowed

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A   [Marks: 02 each]

1.
   (a) Find the quartile deviation from the given data: 28,18,20,24,27,30,15.

   (b) Find the area under the normal curve between $z = 0$ and $z = 1.54$

   (c) State the relation between the correlation and regression coefficients?

   (d) Find the probability of drawing two cards king and queen from a pack of cards in two consecutive draws, the card drawn are not being replaced.

   (e) Find the mean and the standard deviation of the number of heads in 100 tosses of a fair coin.

   (f) If two Eigen values of a matrix are -1 and 1. Find the third Eigen value when sum of diagonal elements of a matrix is given to be -4.

Part – B   [Marks: 04 each]

2. Compute median from the following data:

Mid-value	5	15	25	35	45	55	65	75
Frequency	15	7	11	10	13	8	20	16

3. Two salesmen A and B are working in a certain district .From a sample survey conducted by a head office, the following results were obtained. State whether there is any significant difference in the average sales between the two salesmen.

	A	B
No.of sales	20	18
Average	170	205
Standard deviation	20	25

(Given the table value of t for 36 d.f. , $t_{0.5}$ for two tailed test=1.96)

4. Obtain the regression equation of Y on X by least square method:

X	1	2	3	4	5
Y	2	3	5	4	6

5. One card is drawn at random from numbers 1 to 150 . Find the probability that it is either divisible by 3 or 5

6. Describe the different methods of primary data collection.

7. If 8 ships out of 10 arrive safely , find the probability that at least one would arrive safely out of 5 ships selected at random.

Part – C   [Marks: 12 each]

8. Calculate coefficient of Karl Pearsons coefficient of correlation from the following data:

X	100	200	300	400	500	600
Y	110	120	135	140	160	165

OR

The number of automobile accidents per week in a certain city were as follows:

12, 8, 20, 2, 14, 10, 15, 6, 9, 4. Are these frequencies in agreement with the belief that accident's numbers were the same during these 10 week period.

(Given $\chi^2_{0.05}$ for 9 d.f. =16.92).

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9. The daily outputs of the three machines in a factory are in the ratio of 2:3:1. Past experience shows that 2%, 4% and 5% of the item produced by A, B and C respectively are defective. If an item is selected at random is found to be defective, find the probability that it is produced by A or B.

OR

Fit a Binomial distribution to the following data:

X	0	1	2	3	4	5	6	7	8	9	10
Y	6	20	28	12	8	6	0	0	0	0	0

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