Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: 02]
Uni. Roll No. .....

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

Q1.

a) Find the mean of the data: 15,20,30,22,25,18,40,50,55,65.
b) Define Null hypothesis.
c) If the regression coefficient of x on y is -1/6 and that of y on x is -1/2, what is the value of correlation coefficient between x and y?
d) If a leap year is selected at random, what is the probability that it will contain 53 Sundays?
e) Check the correctness of the statement,"Mean of a B.D is 3 and variance is 5."
f) Average score of two batsman A and B are respectively 40,45 and their standard deviation are respectively 9,11. Which batsman is more consistent?

Part – B [Marks: 04 each]

Q2. Calculate the Median of the data given below.

Marks	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	8	11	9	25	12	16

Q3. The nine items of a sample have the following values: 45,47,50,52,48,47,49,53,50. Does the mean of these values differ significantly from the assumed mean 47.5? (tabulated value =2.31)

Q4. Find the rank correlation from the following data:

X	56	66	49	55	64	68	46	50
Y	40	70	50	60	80	75	49	62

P.T.O.

Q5. A problem in statistics is given to three students A,B and C whose chances of solving it are 1/2 , 1/3 and 1/4 respectively. What is the probability that the problem will be solved if all of them try independently.

Q6. If on an average , one ship out of 10 is wrecked , find the probability that out of 5 ships expected to arrive the port, at least four will arrive safely.

Q7. Fit a linear curve to the following data:

x	1	2	3	4	5
y	14	27	40	55	68

Part – C

[Marks: 12 each]

Q8. Calculate the Karl Pearson's coefficient of correlation from the following data:

X	27	26	25	24	23	22	21
Y	22	21	20	19	18	15	10

OR

A factory produces two types of electric bulbs A and B. In an experiment relating to their life, the following results were obtained.

Length of life (hrs)	500-700	700-900	900-1100	1100-1300	1300-1500
No. of bulbs of A	5	11	26	10	8
No. of bulbs of B	4	30	12	8	6

Compare the Variabilities of life of two varieties using Coefficient of variation.

Q9. In a bolt factory, machines A, B and C manufacture respectively 25%, 35% and 40% of the total bolts. Of their outputs 5%, 4% and 2% are respectively defective bolts. A bolt is drawn at random from the product.

(I) If the bolt drawn is found to be defective , what is the probability that it is manufactured by machine B?

(II) What is the probability that bolt drawn is defective?

OR

Fit a Poisson distribution to the following data and calculate the expected frequencies.

x	0	1	2	3	4
f	109	65	22	3	1

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