

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

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Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 4th

Name of Subject: Probability and Statistics

Subject Code: BSIT-101

Paper ID: 16232

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
- 4) Scientific Calculator is allowed.

Part – A

[Marks: 02 each]

Q1.

- a) What is the difference between skewness and kurtosis?
- b) What is Type I and Type II error?
- c) What is the difference between correlation and regression?
- d) What is sampling distribution?
- e) What is mean and variance of poison distribution?
- f) A bag contains 4 red balls, 3 ^{white} balls and 5 green balls. A ball is drawn from the bag at random. What is the probability of getting a non red ball?

Part – B

[Marks: 04 each]

Q2. Calculate the coefficient of correlation between X and Y for the following data.

X: 5 9 13 17 21

Y: 12 20 25 33 35

Q3. Obtain the two regression equations from the following data.

Sales: 91 97 108 121 67 124 51 73 111 57

Purchases: 71 75 69 97 70 91 39 61 80 47

Q4. What is Sampling? What is the difference between Probability and Non-Probability Sampling?

- Q5. A pack of 50 tickets numbered 1 to 50 is shuffled and then two tickets are drawn. Find the probability that:
- Both the tickets drawn have prime numbers.
 - None of the tickets drawn has prime numbers.
- Q6. What is the difference between frequency and probability distribution? Explain in detail.
- Q7. Calculate Median and Mode for the following distribution.

Production per day (in Tons)	21-22	23-24	25-26	27-28	29-30
No. of days	7	13	22	10	8

Part – C

[Marks: 12 each]

- Q8. Fit a straight line for the following data.

X: 10	20	30	40	50
Y: 22	23	27	28	30

OR

A dice is tossed 120 times with the following results:

Number turned up: 1	2	3	4	5	6	Total	
Frequency:	30	25	18	10	22	15	120

Test the hypothesis that the dice is unbiased.

[Note: The table value of $\chi^2_{5\%, 5} = 11.070$]

- Q9. Three similar boxes have white and black balls. Box I has 1 white and 2 Black, Box II has 2 white and 1 black, Box III has 2 white and 2 black. One of the boxes is selected and a ball is chosen at random from it, which turns out to be white. Find the probability that the third box is chosen using Bayes' Theorem?

OR

- What is the difference between Probability Distribution and Sampling Distribution?
- Explain classical, relative and subjective approaches of Probability with example.
