

**October 2025**  
**B.A./B.Sc.**  
**First Semester**  
**MULTI-DISCIPLINARY COURSE – 1**  
**STATISTICS**  
*Course Code: STO 1.11*  
(Statistical Methods)

Total Mark: 35  
Time: 2 hours

Pass Mark: 14

I. Answer two questions, taking one from each unit.

**UNIT-I**

1. (a) Define data. Discuss the various methods of obtaining data. 1+4=5  
(b) Define mode. How would you calculate mode in case of simple frequency distribution and grouped frequency distribution? 1+4=5
2. (a) What is diagrammatic representation of statistical data? State its merits and demerits. 1+2+2=5  
(b) State the properties of arithmetic mean. 3  
(c) Differentiate between skewness and kurtosis. 2

**UNIT-II**

3. (a) State and prove Baye's theorem. 2+3=5  
(b) A random variable  $X$  is distributed at random between the values 0 and 4 and its probability density function is:  
 $f(x) = kx^3(4-x)^2$  where  $k$  is a constant. Find the value of  $k$  and using this value of  $k$ , find its mean and variance. 5
4. (a) State and prove the extension of addition theorem of probability. 1+4= 5  
(b) The content of urns I, II and III are as follows: 5  
    1 white, 2 black and 3 red balls  
    2 white, 1 black and 1 red balls, and  
    4 white, 5 black and 3 red balls

One urn is chosen at random and two balls drawn from it. They happen to be white and red. What is the probability that they came from Urn I, II or III?

II. Answer any three of the following questions.

5. What is frequency distribution table? Distinguish between discrete and continuous frequency distribution. 2+3=5

6. Define partition values. Find the first and third quartiles for the given data on length of time taken by each of 18 workers to complete a specific job. 1+4=5

Time (in Minutes):	5-9	10-14	15-19	20-24	25-29
No. of Workers:	3	8	4	2	1

7. Define mathematical expectation. State the properties of expectation. 2+3=5

8. Define binomial distribution. With the usual notations, find  $p$  for a binomial variate  $X$ . Here,  $n = 6$  and  $9P(X = 4) = P(X = 2)$  5

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