Department of Mathematics,
National Institute of Technology, Srinagar.

B.Tech 4th Semester	Subject	Examination	Session	Time allowed	Max. Marks
ECE/CHEM/CSE/IT	Statistics & Probability	Supplementary	March-2017	2 Hours	50

NOTE: Attempt any four questions, (All questions carry equal marks).

Q1(a) The first four moments of a distribution about the value 4 of the variable are -1.5,17,-30 and 108.Find the moments about mean , β_1 and β_2.

Also find the moments about (i)the origin and (ii) The point $x = 2$.

(b) A variable X assumes two distinct values 0 and 1. Of the total number of observations N, the fraction p of N are ones and the fraction q of N are zeros. Find the mean and standard deviations of the N observations. (8,4.5)

Q2(a) Calculate an appropriate measure of skewness from the following:

x	10-14	15-19	20-29	30-39	40-49	50-59
f	786	924	320	172	96	32

(b) Fit a second degree parabola to the given data, using the method of least squares:

Length	7.5	10.0	12.5	15.0	17.5	20.0	22.5
Weight	1.9	4.5	10.1	17.6	27.8	40.8	56.9

(5.5, 7)

Q3(a) A man with n keys wants to open his door and tries the keys independently and at random .Find the mean and variance of the number of trials required to open the door (i) if unsuccessful keys are not eliminated from further selection, and (ii) if they are.

(b) A coin is tossed repeatedly until a head appears. Find the expected number of tosses required to obtain the first head. (6.5, 6)

Q4(a) Find μ_1, μ_2, μ_3 and μ_4 of a Poisson distribution. Also find its skewness and Kurtosis.

(b) What is a Beta distributions of first kind find its central and non-central moments. (6.5, 6)

Q5(a) Find the moments about mean of a normal distribution? Also find skewness and kurtosis of a normal distribution.

(b) Derive the regression equation of x on y. Also find the equation of the line of regression of y on x for the following data:

X:	5	7	9	11	13	15
Y:	1.70	2.40	2.80	3.40	3.70	4.40

(6.5, 6)