W-3813

B.C.A. (Sixth Semester) Examination, June-2020

PROBABILITY AND STATISTICS

Paper - I

Time : Three Hours

Maximum Marks : 80 (For Regular Students)

Minimum Pass Marks : 32

Note : Attempt **all** questions.

Unit - I

Q.1. a) Find the median for the following distribution; 16

Wages in Rs.	0-10	10-20	20-30	30-40	40-50
No. of workers	22	38	46	35	20

b) Draw a frequency polygon for the data given below:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	2	4	10	4	3	8	1	5	11	2

Unit - II

Q.2. a) Find the mean, mode, standard deviation and coefficient of skewness for the following:

Years under	10	20	30	40	50	60
No. of persons	15	32	51	78	97	109

b) 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 the mean. 16

Unit - III

Q.3. a) Determine the Binomial distribution for which the mean is 4 and variance is 3 and find its mode.

b) Show that for the Binomial distribution $(q+p)^n$,

$$\mu_{r+1} = pq\left(nr\,\mu_{r-1} + \frac{d\mu_r}{dp}\right)$$

where μ_r is the r*th* moment about the mean. Hence obtain μ_2, μ_3 and μ_4. 16

Unit - IV

Q.4. a) Find the coefficient of correlation between the value of X and Y 16

X	1	3	5	7	8	10
Y	8	12	15	17	18	20

b) Find the rank correlation coefficient from the following data.

X	10	12	15	14	19
Y	40	41	48	60	50

Unit - V

Q.5. a) Explain the following terms: 16

i) Testing hypothesis ii) Alternative hypothesis

b) Show that in a 2×2 contingency table

a	b
c	d

$$x^2 = \frac{(a+b+c+d)(ad-bc)^2}{(a+b)(c+d)(b+d)(a+c)}$$