



বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2020

(Under CBCS Pattern)

Semester - III

Subject: ECONOMICS

Paper: C7T

Full Marks : 60

Time : 3 Hours

Candidates are required to give their answer in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt any **three** questions from the following :

3×20=60

1. (a) (i) Derive the mean and variance of the Poisson distribution.

(ii) State some real-life examples of Poisson distribution.

(b) A lot of 100 items contains 20 defectives. If a simple random sample of size 10 is drawn without replacement, find out the standard error of the sample proportion of defective items.

10+4+6

2. (a) Define Mean deviation and its uses.

(b) The mean age of a group of 100 children was 9.35 years. The mean age of 25 of them was 8.75 years and that of another 65 was 10.51 year. What was the mean age of the remaining ?

(c) Prove that $\sum (xi - A)^2 / n$ is the least when $A = \bar{X}$. 8+6+6

3. (a) Distinguish between point and interval estimation.

(b) State and explain the properties of the good estimator.

(c) Prove that in SRSWR and SRSWOR sample mean is the unbiased estimator of population mean and even in SRSWR the sample variance is not an unbiased estimator of population variance. 5+5+4+6

4. (a) Show that the correlation coefficient r lies between -1 and $+1$.

(b) For two variables X and Y two regression lines are obtained $3X + 2Y - 25 = 0$ and $6X + Y - 30 = 0$. Identify regression equation of Y on X and that of X on Y .

(c) Find the means of X and Y and the coefficient of correlation. 8+4+4+4

5. Find the mean and variance of the exponential function

$f(x) = \frac{1}{\theta} e^{-x/\theta}$, $x > 0$, $\theta > 0$ (Constant). 8+12

6. (a) Define likelihood function of a parameter.

(b) Estimate μ and σ^2 for a Normal Distribution with the help of maximum likelihood estimation method on the basis of a SRSWR. 4+6+10
