



**UNIVERSITY OF NORTH BENGAL**  
B.Sc. Honours 4th Semester Examination, 2021

**GE4-STATISTICS**

Full Marks: 40

**ASSIGNMENT**

*The figures in the margin indicate full marks.  
All symbols are of usual significance.*

**GROUP-A**

1. Answer any **four** questions from the following: 2×4 = 8
- (a) State two properties of Poisson distribution.
  - (b) Give the classical definition of probability.
  - (c) The mean and variance of  $X$  are 10 and 4 respectively. Find the variance of  $5 - 2X$ .
  - (d) If  $A$  and  $B$  are two independent events, then show that  $A^c$  and  $B^c$  are also independent.
  - (e) Show that the probability of an impossible event is zero.
  - (f) A coin is tossed 6 times in succession. Find the probability of obtaining one head.

**GROUP-B**

**Answer any four questions from the following** 8×4 = 32

2. (a) Find the variance of Binomial distribution. 4
- (b) Show that the expectation of the product of two independent random variables is equal to the product of their expectations. 4
3. (a) Find the mean of normal distribution. 3
- (b) The mean of a normal distribution is 50 and 5% of the values are greater than 60. Find the s.d. (standard deviation) of the distribution. (Given that the area under standard normal curve between  $Z = 0$  and  $Z = 1.64$  is 0.45). 5

4. State and prove Bayes' theorem. 2+6=8
5. (a) Write down the probability mass function of Poisson distribution. 1  
(b) Explain discrete probability distribution. 2  
(c) Write down the chief characteristics of normal probability Curve. 5
6. (a) Define exhaustive events. 1  
(b) Show that in a Poisson distribution with unit mean, mean deviation about mean is  $(2/e)$  times the standard deviation. 3  
(c) A coin is tossed until a head appear. What is the expectation of the number of tosses required? 4
7. (a) Define: 1+1  
(i) Axiomatic definition of probability.  
(ii) Equally likely events.  
(b) If  $X$  is a Poisson variate such that  $P(X = 2) = 9P(X = 4) + 90P(X = 6)$ . Find the mean of  $X$ . 6

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