Government Degree College Ganderbal

Department of Statistics

<u>Some Important Instructions</u>

Before writing and preparing your assignments, candidates are required to read the instructions given below carefully. It is mandatory for candidates to strictly adhere to every point so that your assignments will be approved for evaluation without any issue.

1) Students are required to write down their Roll No, Name, Registration No, Semester and page numbering, on top of each page.
2) The assignments must be hand written on A4 size ruled paper with not more than 10 pages.
3) Students are required to convert their hand written assignment into a single pdf file by using a user friendly camscanner app.
4) Students are required to scan your hand written assignments clearly, so that the submitted assignments are readable for concerned evaluator
5) Students are required to submit their scanned copy of assignment through Email: <u>statistics.assignmentsem2@gmail.com</u>
6) Do not waste your precious time by simply copying from other students, instead you must use your IQ to prepare your assignments for best results
7) Students are advised to keep a hard copy of their assignments with them
8) The last date for the submission of assignments is 26/06/20.
9) Students must put their signatures on top of each page.
10) The first page of assignment must only contain the following information
     i)   Name of candidate……………………………..
     ii)   Roll No…………………………………………
     iii)   Batch…………………………………………...
     iv)   Category: Fresh/Backlog………………………
     v)   Regn. No:………………………………………
     vi)   Subject…………………………………………
     vii)   Semester……………………………………….
     viii)   Contact No…………………………………….
     ix)   Email address………………………………….
     x)   Date of Submission……………………………
     xi)   Signature of Candidate…………………………
11) Last but not least students must cross check whether they have followed all the points given in the instructions carefully before the submitting their assignments.

Subject: Statistics   **Max. Marks: 60**

Class: B.A/B.Sc. Regular Batch 2019 and Backlog Students of Batch 2016/2017/2018

Note: Attempt any two (02) questions and each question carries equal marks.

Q.1(a) Give the classical and statistical definition of probability. What are the objections raised in these definitions?

(b) Explain the 'Law of Total Probability'.

(c) (i) Three groups of children contain respectively 3 girls and 1 boy; 2 girls and 2 boys; and 1 girl and 3 boys. One child is selected at random from each group. Shows that the chance of the three selected consist of 1 girl and 2 boys is 13/32.

 (ii) Prove that: if B⊂A, then P(B) ≤P(A).

Q.2(a) Explain the terms:(i) Probability Distribution, (ii) Distribution Function, (iii) Joint and Marginal Probability Distributions.

(b) Let X be a random variable with: $f(x) = \begin{cases} ke^{-2x}, & x \geq 0. \\ 0 & otherwise. \end{cases}$

(i) Find k. (ii) Evaluate $P(x > 1)$.

(c) Define moment generating function and discuss its usage and properties.

Q.3(a) Explain Hypergeometric distribution and its properties.

(b) Derive the first two moments about origin of Binomial distribution. And hence find its mean and variance.

(c) It has been found that on an average the no. of mistakes per page typed of a typist is 1.5. Find the probability that there are: (i) 3 or less mistakes, (ii) no mistakes.

Q.4 (a) When a random variable is said to follow exponential distribution? What are the properties of exponential distribution? Derive these.

(b) What is the density function of uniform random variable? Obtain its mean and variance through m.g.f.

(c) Suppose that a lightbulb lasts on average 100 hours. Assuming exponential distribution, compute the probability that it lasts more than 200 hours and the probability that it lasts less than 50 hours.