

**Government Degree College Ganderbal**

**Department of Statistics**

**Some Important Instructions**

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 assignment through Email: [statistics.assignmentsem5@gmail.com](mailto:statistics.assignmentsem5@gmail.com)
- 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 submitting their assignments.

Assignment Paper for 5<sup>th</sup> semester, June 2020

**Subject: Statistics**

**Max. Marks: 60**

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

**Note: Attempt any two questions. Each question carries equal marks.**

- 1) a) What is operation research and write a brief note on its development?  
b) Discuss briefly the importance of operation research in industry.  
c) What is the scope and limitations of operation research?
2. a) Define the following terms:  
(i) Basic feasible solution (ii) Unbounded solution (iii) Optimum solution (iv) Slack variable and, (v) Surplus variable.  
b) Explain the procedure for converting a general linear programming problem into its standard form?  
c) Solve the following LPP graphically:

$$\text{Max. } Z = 8000x_1 + 7000x_2$$

$$\text{Subject to } 3x_1 + x_2 \leq 66$$

$$x_1 + x_2 \leq 45$$

$$x_1 \leq 20$$

$$x_2 \leq 40$$

$$\text{and } x_1, x_2 \geq 0$$

3. a) What is simplex table? Write down the procedure for using Simplex method in solving linear programming problem.  
b) Use two-phase simplex method to solve:  
Min.  $Z = x_1 - 2x_2 - 3x_3$   
Subject to constraints:  
 $-2x_1 + x_2 + 3x_3 = 66$   
 $2x_1 + 3x_2 + 4x_3 = 1$   
and  $x_1, x_2, x_3 \geq 0$
- c) Describe the procedure of Big-M method for solving linear programming problem.
4. a) What is a transportation problem? Give its mathematical formulation.  
b) Find the initial basic feasible solution to the following transportation problem by North West Corner rule:

Warehouse→ Factory↓	$W_1$	$W_2$	$W_3$	$W_4$	Factory Capacity
$F_1$	19	30	50	10	7
$F_2$	70	30	40	60	9
$F_3$	40	8	70	20	18
Warehouse Requirement	5	8	7	14	34

- c) Describe the procedure of Vogel's Approximation Method for finding the initial basic feasible solution to Transportation Problem