

2/22

2807M092

Candidate's Seat No : \_\_\_\_\_

B.Sc. Sem.-6 Examination

CC - 307

Statistics

July 2021

Time : 2-00 Hours]

[Max. Marks : 50

Instructions: All Questions in Section I carry equal marks  
Attempt any **THREE** questions in Section I  
Question IX in Section II is **COMPULSORY**

**Section I**

Q I

- A. State and prove Neyman-Pearson Lemma. [7 marks]  
B. A random sample of size 5 is drawn from Binomial population with probability of success = P. suppose we want to test  $H_0: P = \frac{1}{2}$  Vs  $H_1: P = \frac{3}{4}$ . Obtain most powerful test (critical region) for  $\alpha = \frac{6}{32}$ . [7 marks]

Q II

- A. Define the following terms: [7 marks]  
i) Level of significance  
ii) Power of the test  
iii) Type I and type II errors  
iv) Most Powerful test  
B. Let  $x_1, x_2, \dots, x_n$  be a random sample of size 'n' from  $N(\mu, \sigma^2)$ . Test for  $\mu$  when  $\sigma$  is known. Obtain the Best Critical Regions for testing  $H_0: \mu = \mu_0$  Vs  $H_1: \mu = \mu_1$  ( $\mu_1 < \mu_2$ ) [7 marks]

Q III

- A. Give detail procedure for test for significance of single sample proportion. [7 marks]  
B. Explain the test for the significance of observed value of correlation coefficient when hypothetical value of correlation coefficient = 0? [7 marks]

Q IV

- A. Write in detail for the test of homogeneity of  $k$  correlation coefficients. [7 marks]  
B Give detail procedure for the test of significance of the difference between two sample means. [7 marks]

Q V

- A. Discuss in detail any 2 applications of  $t$ -test. [7 marks]  
B. Write the test to test the homogeneity and independence in a contingency table. [7 marks]

Q. VI

- A. State paired  $t$  - test for difference of means with the method and test statistics. [7 marks]  
B. Discuss in detail any 2 applications of  $F$ -test. [7 marks]

Q. VII

- A. Describe Median test in detail. [7 marks]  
B. Write the difference between parametric and non-parametric tests. [7 marks]

P. T. O.

M1092 - 2

Q. VIII

- A. Write the advantages and disadvantages of non-parametric test. [7 marks]  
B. Write detailed account of Mann-Whitney U test. [7 marks]

**Section II**

Q. IX Answer in short (Any Four)

[8 marks]

- A. Define null hypothesis.  
B. Give an example of simple hypothesis.  
C. Define power function.  
D. What is critical region?  
E. Write the test statistic used to test the significance for single sample proportion.  
F. Describe two tailed critical region on Standard Normal probability curve. 1. Write the null hypothesis to test equality of two population variances.  
G. What is the test statistic used to test the significance of an observed correlation coefficient.  
H. T test is used to test the homogeneity of variance. True/ False
-