# COEP Technological University

(COEP Tech)

A Unitary Public University of Government of Maharashtra

## [MA-23005] Probability and Statistics

Program : F.Y.B.Tech
Examination : R Programming
Date-20/04/2024

Academic Year : 2023-24
Maximum Marks : 20

**Branch:** **Student MIS Number :** | | | | | | | | | | |

**Instructions :**

1. Write an appropriate R command.
2. Write an appropriate interpretation for tests of hypothesis.
3. Save the output file using your MIS ID.

**Write a R code to solve the following questions.**

Q.1) A random sample of 400 flower stems has an average length of 10.2cms, and a standard deviation of 2.25 cm. Can this be regarded as a sample from a large population with mean length of 10 cms.? [4M]

Q.2) During the economic boom, a researcher believes that the economic recession may have an adverse impact on the average monthly salary (in Rs) of I.T professionals. To verify his belief, a random sample of 12 I.T professionals gave the following average monthly salary.
70000 ,78000 ,62000 ,66000 ,61000 ,72000 ,58000 ,64000 ,60000 ,73000 ,74000 ,76000
Test whether the average monthly salary has gone below Rs 73000. [4M]

Q.3) Let X $\rightarrow$ P($\lambda$) such that $P[X = 2] = \frac{2}{3} * P[X = 1]$ , Find P[X=0],P[X=3] [2M]

Q.4) Let X$\rightarrow$ N($\mu = 5, \sigma^2 = 4$). Find P[$X > 2$], P[$10 \leq X \leq 15$] [4M]

Q.5) The median age of a tourist visiting to certain place is claimed to be 41 years. A random sample of 17 tourists have the age
25 , 19 , 38 ,52 ,57 ,39 ,46 ,46 ,30 ,49 ,27 ,39 ,44 ,63 ,31 ,67 ,42
Use sign test to test the claim at 5% level of significance. [3M]

Q.6) The following data represents the number of hours that a rechargeable hedge trimmer operates before a recharge is required.
1.5 ,2.2 ,0.9 ,1.3 ,2.0 ,1.6 ,1.8 ,1.5 ,2.0 ,1.2 1.7
Use Wilcoxn's signed rank test to test the hypothesis that this particular trimmer operates with median of 1.8 hours before requiring a recharge. [3M]

**END**