

STATISTICS –GENERAL- PRACTICAL

B.Sc. 3rd Semester, 2020

F.M-30

Time-2.30 Hrs.

The figures in the margin indicate full marks.

1. A simple random sample (x_1, x_2, x_3, x_4) of size 4 is drawn from an infinite population with mean μ , variance σ^2 . Define the two estimators of μ as follows:

$$T_1 = \frac{1}{3}(x_1 + x_2) + \frac{1}{6}(x_3 + x_4), \quad T_2 = \frac{1}{10}(x_1 + 2x_2 + 3x_3 + 4x_4)$$

Which one is better and why? (6)

2. The weights at birth (in kg) for 15 babies born in a Calcutta hospital are given below:

2.79, 3.01, 3.19, 3.10, 3.38, 2.56, 2.16, 3.06, 3.42, 3.51, 3.64, 2.25, 2.61, 3.55, 3.82

Give the $100(1-\alpha)\%$ confidence interval to μ , which is the mean weight at birth for all such babies. Take $\alpha=0.01$. (9)

3. The manufacturer of a certain brand of light bulbs claims that the variance of the lives of the bulbs produced is 4200 square hours. A market research company took a random sample of 25 such bulbs and tested them. The variance of the lives of these bulbs was found to be 5200 square hours. Assume that the lives of all such bulbs is normally distributed. Test at 5% level of significance whether such bulbs is different from 4200 square hours. (6)

4. Thirty sugar beet plots numbered in sequence are shown in the table. The treatment might have been assigned to the 30 experimental units (plots of land) of that experiment, in order (A through F) to plots according to the necessary ranks, to give as many replications as needed for each treatment.

D(0.9)	F(41.0)	E(39.2)	B(37.5)	B(38.4)
F(40.6)	C(39.5)	D(41.7)	E(38.7)	D(40.1)
C(40.9)	E(39.7)	D(39.4)	C(39.8)	F(39.8)
A(31.3)	E(40.6)	B(38.8)	A(32.2)	A(33.9)
D(39.2)	A(29.2)	F(41.1)	B(37.4)	D(40.0)
A(33.4)	F(41.5)	C(38.6)	B(35.8)	E(41.9)

Calculate the Total SS, Treatment SS and Error SS and construct the ANOVA table and analyze the experiment. (9)

