M 8584

Reg. No. : ....

Name : ....

IV Semester B.Sc. Degree (CCSS – Reg./Supple./Imp.) Examination, May 2015
COMPLEMENTARY COURSE IN STATISTICS
(For Maths/Comp. Science Core)
4C04 STA : Statistical Inference

Time : 3 Hours

Max. Weightage : 30

Instruction : ***Use*** *of calculators and tables* ***permitted***.

PART – A

Answer **any 10** questions (weight **1 each**) :

1. Define parameter and statistic.

2. Define Fistern 't' statistic.

3. If $X \sim N(\mu, \sigma^2)$ state the distribution of sample mean $\overline{X}$ based on a sample of size 'n'.

4. State the Cramer Rao inequality.

5. Distinguish between point estimation and interval estimation.

6. Define F-statistic and state its probability density function.

7. Define type I error and type II error.

8. Distinguish between one tailed and two-tailed test.

9. State the applications of χ^2-distribution in testing.

10. What is meant by paired t-test ?

11. Define the degrees of freedom.

$(10 \times 1 = 10)$

P.T.O.

PART – B

Answer **any 6** questions. Weight **2 each** :

12. Obtain the moment generating function of χ^2-distribution.

13. Describe the desirable properties of a good estimator.

14. If $f(x) = \dfrac{1}{b-a}$, $a < x < b$, find maximum likelihood estimator of a and b.

15. Explain the method of moments.

16. Explain the Neyman-Pearson approach of testing of hypothesis.

17. Explain the procedure for testing equality of two population proportion.

18. Explain the procedure for testing homogenity of variances.

19. Obtain the interval estimates of 95% confidence for the population variance σ^2 if s^2, sample variance is 12 based on a random sample of 15 observations.

20. Explain the procedure of χ^2-test in testing of goodness of fit.   (6×2=12)

PART – C

Answer **any two** questions. Weight **4 each** :

21. Can vaccination be regarded as preventive measure, using the following data. Of 1482 persons exposed in a locality 368 were attacked. Of 1482, 343 were vaccinated and of there only 35 were attacked.

22. In a random sample of 500, the mean is found to be 20. In another independent sample of 400 the mean is 15. Could the samples have been drawn from the same population with standard deviation 4.

23. A certain stimulus administered to 10 patients resulted in the following increase in blood pressure. 5, 2, 8, –1, 3, 0, –2, 1, 5 and 0. Can it be concluded that the stimulus will be accompanied by an increase in blood pressure.

24. In random sampling from a normal population $N\left(\mu, \sigma^2\right)$ find the estimators by the method of moments.   (2×4=8)

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