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Reg. No. : .....

Name : .....

Fourth Semester B.Sc.Degree Examination, July 2019

First Degree Programme under CBCSS

Complementary Course for Physics

ST 1431.2 – STATISTICAL INFERENCE

(2017 Admission)

Time : 3 Hours Maximum Marks : 80

Section – A

Answer **all** questions. Each carries 1 mark

1. Define point estimation.
2. What are the properties of a good estiamator?
3. Define Statistical inference.
4. Write the formula for the confidence interval for mean of a normal population.
5. What do you mean by testing of hypothesis?
6. Define simple hypothesis.
7. What is large sample test?
8. Define power of a test.
9. Which test statistic is used ANOVA?
10. Name the sum of squares used in two way analysis?

(10 × 1 = 10 Marks)

P.T.O.

Section – B

Answer any **eight** questions. Each carries 2 marks.

11. Define unbiased estimator.

12. What is Neyman factorization theorem?

13. Find the moment estimator of λ of position family.

14. Write the formula of confidence interval for the population mean 'μ' of Normal, when sample size is small.

15. Find 98% confidence interval for population variance if sample size is 10 with variance 9.19?

16. Define different types of errors present in testing of hypothesis.

17. What is meant by level of significance?

18. Write the test statistic used for equality of population mean.

19. What are the uses of "chi square" test?

20. Define ANOVA?

21. Draw the ANOVA table for one-way classification.

22. Write the hypothesis used in two-way classification.

(8 × 2 = 16 Marks)

Section – C

Answer any six questions. Each carries 4 marks

23. Explain method of moments on estimation.

24. Write the properties of MLE.

25. How do you construct interval estimator of difference of population proportion.

26. Construct 99% confidence interval for difference of means. The first sample has 32 units with mean 72, and variance 64. The second sample has 32 units with mean 70 and variance 36.

27. Write a note on chi-square test for goodness of fit.

28. A group of randomly selected patients are classified according to their smoking habit and heart problem. Test whether the smoking habit and heart problem are dependent.

SMOKING	Heart problem: YES	Heart problem :No
YES	60	22
NO	15	33

29. Explain paired "t" test.

30. A sample of 150 items have an average 3.6 and standard deviation 0.25. Test whether the population mean is 3.5.

31. Complete the ANOVA table

source	df	Sum of square	Mean sum of sqares	Cal F
Row	9	6810		
coloumn	4	-		
error	-	-	76.06	
Total	-	99.48		

(6 × 4 = 24 Marks)

Section – D

Answer any **two** questions. Each carries **15** marks

32. An experiment on foods A and B are done on the same 8 animals. The gain in weight are given. Can we conclude that food B is better than food A.

Animal	1	2	3	4	5	6	7	8
Food A	49	53	51	52	47	50	52	53
Food B	52	55	52	53	50	54	54	53

33. A coin is rolled 60 times and obtained 60 head and 80 tail times. Test whether the coin is unbiased or not.

34. Analysis the data on the scores obtained by 5 students in 3 schools: State your conclusion.

School 1: 9, 7, 6, 5, 8

School 2: 7, 4, 5, 4, 5

School 3: 6, 5, 6, 7, 6

35. Analysis the data on 4 types of wheat (W1,W2,W3,W4) and 3 types of fertilizer (A,B,C)

W1	W2	W3	W4
A-8	C-10	A-6	B-10
C-12	B-8	B-9	A-8
B-10	A-8	C-10	C-9

(2 × 15 = 30 Marks)