20U307 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

(CBCSS - UG)

(Regular/Supplementary/Improvement)

CC19U STA3 C02 - PROBABILITY DISTRIBUTIONS AND PARAMETRIC TESTS

(Statistics - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours Maximum : 60 Marks

Credit : 3

Part A (Short answer questions)

Answer ***all*** questions. Each question carries 2 marks.

1. Comment on the statement ' the mean of binomial distribution is 3 and variance is 4'.
2. Define Poisson distribution.
3. Define central limit theorem.
4. If a continuous r.v follows standard normal distribution, what about its mean and variance.
5. Give any two advantages of probability sampling.
6. Define simple and alternative hypothesis.
7. Define Type I and Type II error
8. Write a note on p value.
9. What do you mean by large sample tests? Give an example.
10. Write down the test statistic for testing the significant difference between means of two populations if the samples are large.
11. What are the assumptions made for the application of students t test?
12. What is test for correlation?

(Ceiling: 20 Marks)

Part B (Short essay questions - Paragraph)

Answer ***all*** questions. Each question carries 5 marks.

13. Determine the binomial distribution for which mean = 6 and variance = 4. Also find P(X=3)

14. If X is normally distributed with mean 10 and variance 16. Find P(15<X<23).

15. Explain simple random sampling.

16. Explain the properties of normal distribution.

17. Explain the test procedure for testing equality of two population proportions.

18. The mean life of a sample of 10 electric bulbs from batch A was found to be 1456 hours with s.d. 423 hours. A sample of 17 bulbs from batch B shows a mean life of 1280 hours with s.d. 398 hours. Is there significance difference between means of two batches.

19. Two random samples drawn from two normal populations are:

    Sample I : 20,16, 26, 27, 23, 22, 18, 24, 25, 19

    Sample II : 27, 33, 42, 35, 32, 34, 38, 28, 41, 43, 30, 37

    Obtain estimates of the variances of the populations and test whether the two populations have the same variances.

(Ceiling: 30 Marks)

Part C (Essay questions)

Answer any ***one*** question. The question carries 10 marks.

20. Fit a poisson distribution for the following data.

x	0	1	2	3	4
f	122	60	15	2	1

21. (a) Explain the test procedure of t-test for dependent samples.

    (b) The following are the marks obtained by 10 students in an examination 43, 48, 65, 57, 31, 60, 37, 48, 78, 59. Test the hypothesis that the population variance is 100.

(1 × 10 = 10 Marks)

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