BA, BSC, BCOM DEGREE END SEMESTER EXAMINATION - OCTOBER 2025

UGP (HONS.) SEMESTER - 3: DISCIPLINE SPECIFIC COURSE

COURSE: 24UEMSDSC204: DATA ANALYSIS IN INFERENTIAL STATISTICS USING R/PYTHON

(For Regular 2024 Admission)

Time: 2 Hours   Max. Marks: 70

PART A

Maximum mark from this part is 10.

Each question carries 2 marks

1. Define statistic and give an example.   (R, CO 1)
2. Define standard error.   (R, CO 1)
3. What is meant by confidence coefficient in interval estimation?   (U, CO 2)
4. Define consistency of an estimate.   (R, CO 2)
5. Define simple hypothesis.   (R, CO 3)
6. Define significance level in testing of hypothesis.   (R, CO 3)
7. What is degrees of freedom?   (U, CO 4)
8. Write the test statistic for testing the independence in the case of a   (U, CO 4)
   2x2 contingency table with frequencies a, b, c, d.

PART B

Maximum mark from this part is 30

Each question carries 5 marks

9. Apply the moment generating function method to obtain the distribution   (A, CO 1)
   of the mean of a sample of size n taken from a normal population with
   mean μ and standard deviation σ.
10. Write down the mgf of the Chi Square distribution with n degrees of   (A, CO 1)
    freedom. Also find its mean and variance from it.
11. Show that sample mean is an unbiased estimate of population mean.   (U, CO 2)
12. A sample of size 16 taken from a normal population N(μ, σ) was found to
    have mean of 120 and standard deviation 24. Obtain the 95%
    confidence interval for μ.   (A, CO 1)
13. Briefly explain the steps in a statistical test.   (U, CO 3)

14. A sample of size 26 taken from a normal population was found to have a   (A, CO 4)
    mean of 1180 and standard deviation 50. Do you agree that the sample is
    taken from a population with mean 1200? (significance level of 1%.)

15. In a sample of 600 men from a certain city 400 are found to be smokers.   (A, CO 4)
    In 900 from another city 450 are smokers. Do the data indicate that cities are
    significantly different as far as smoking habit of people are concerned.

16. The following data was obtained in an investigation about the effect   (A, CO 4)
    of vaccination for small pox. Examine whether vaccination is effective
    in preventing small pox

	Vaccinated	Not vaccinated	Total
Attacked by small pox	3	12	15
Not attacked	8	5	13
Total	11	17	28

PART C

Maximum mark from this part is 30

Each question carries 15 marks

17. Write the interrelationship between normal, chi square, t and F distributions   (R, CO 1)

18. The following sample is obtained from a normal population.   (A, CO 2)
    Construct a 95% confidence interval of the population variance.
    38, 42, 67, 45, 71, 53, 66, 70, 55

19. The following sample is obtained from a normal population.   (A, CO 3)
    Test whether mean of the population is 100.
    88, 76, 109, 112, 101, 94, 86, 95, 110, 112

20. A die was tossed 180 times. The following results were obtained.   (A, CO 4)
    Test whether the die is unbiased.

No. Turning up	1	2	3	4	5	6
frequency	25	35	40	22	32	26

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