

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2019
(Fifth Semester)

Branch – **STATISTICS**

STATISTICAL INFERENCE – II

Time : Three Hours

Maximum : 75 Marks

SECTION-A (20 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 x 2 = 20)

- 1 Define Hypothesis.
- 2 Define Best Critical Region.
- 3 Define Most Powerful Test.
- 4 Define Likelihood ratio criterion.
- 5 Define Power of test.
- 6 Define Type I error and Type II error.
- 7 Write any two uses of t-test.
- 8 Define F-test.
- 9 What are attributes? State its uses.
- 10 What is 2x3 contingency table? Give an example.

SECTION - B (25 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

- 11 a Find the most powerful testing for testing $H_0:\theta=1$ Vs $H_1:\theta=2$ based on a sample of size 10 from the normal population $N(\theta,25)$.

OR

- b Let x_1, x_2, \dots, x_{10} be a random sample of size 10 from a normal distribution $N(0, \sigma^2)$. Find best critical region of size $\alpha=0.05$ for testing $H_0:\sigma^2=1$ Vs $H_1:\sigma^2=2$.

- 12 a Distinguish difference between Testing of Hypothesis and test of significance.

OR

- b Explain the steps involved in test of significance for single mean.

- 13 a Explain the steps involved in test of significance for Standard Deviation.

OR

- b Two Salesman A and B are working in a certain district. From a sample survey conducted by the head office, the following result were obtained. State whether there is any significant difference in the average sales between the two salesman.

	A	B
No. of Sales	20	18
Average Sales (in Rs.)	170	205
Standard Deviation	20	25

- 14 a Explain the steps involved in test of significance for equality two population variance (F-test).

OR

- b In a sample of 8 observations, the sum of the squared deviations of items from the mean was 94.5. In another sample of 10 observations, the value was found to be 101.7. Test whether the difference in the variance is significant at 5% level.

- 15 a Discuss the steps involved in test of independence of attributes.

OR

- b In 120 throws of a single die the following distribution of faces was observed.

Face	1	2	3	4	5	6
Frequency	30	25	18	10	22	15

Can you say that die is biased.

SECTION - C (30 Marks)

Answer any **THREE** Questions

ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

- 16 State and prove Neymann Pearson fundamental lemma.
- 17 Describe the LR procedure for testing equality of means of two normal population.
- 18 Discuss the steps involved in test of significance for difference of means.
- 19 Describe χ^2 -test for independence of attributes.
- 20 Discuss coefficient of colligation and give its relation.

Z-Z-Z

END