



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.A.DEGREE EXAMINATION –ECONOMICS

THIRD SEMESTER – APRIL 2019

EC 3503– QUANTITATIVE METHODS IN ECONOMICS

Date: 24-04-2019
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

PART –A (5 x 4 = 20 Marks)

ANSWER ANY FIVE OF THE FOLLOWING NOT EXCEEDING MORE THAN 75 WORDS EACH :

1. Define classical probability using a suitable example.
2. State the properties of Binomial distribution.
3. Distinguish between Type I and Type II errors.
4. State the use of Chi - square test.
5. State the concept of mathematical expectation.
6. Differentiate null and alternative hypothesis.
7. If the probability of defective bolts is 0.1, find the mean and the standard deviation for the distribution of defective bolts in a total of 500.

PART –B (4 x 10 = 40 Marks)

ANSWER ANY FOUR OF THE FOLLOWING NOT EXCEEDING MORE THAN 250 WORDS EACH:

8. A bag contains 6 white , 4 red and 10 black balls. Two balls are drawn at random .Find the probability that they both will be black.
9. Discuss the properties of Normal distribution.
10. State the addition and multiplication theorem of probability.
11. A random sample of size 16 has 53 as mean. The sum of the squared of the deviations taken from the mean is 135. Can this sample be regarded as taken from the population having 56 as mean?
(For $v = 15$, $t_{0.05} = 2.13$)
12. Two samples are drawn from two normal population. From the following data test whether the two samples have the same variance at 5% level. ($v_1 = 9$ and $v_2 = 7$, $F_{0.05} = 3.68$)

Sample 1	60	65	71	74	76	82	85	87		
Sample 2	61	66	67	85	78	63	85	86	88	91

13. Discuss the applications of Poisson distribution by stating its properties.
14. Illustrate the one way ANOVA table.

PART –C (2 x 20 = 40 Marks)

ANSWER ANY TWO OF THE FOLLOWING NOT EXCEEDING MORE THAN 900 WORDS EACH:

15. Examine the procedure for testing of hypothesis.

16. Based on information of 1000 randomly selected fields about the tenancy status of cultivation of these fields and the use of fertilizers, collected in a research the following was noted

	OWNED	RENTED	TOTAL
Using fertilizers	416	184	600
Not using fertilizers	64	336	400
Total	480	520	1000

Can it be concluded that owner cultivation are more inclined towards the use of fertilizers at the 5% level?
(χ^2 at 5 % level = 3.84)

17. Eight coins are tossed at a time 256 times .Number of heads observed at each throw is recorded and the results are given below:

- Find the expected frequencies.
- What are the theoretical values of mean and standard deviation?
- Calculate the mean and standard deviation of the expected frequencies.

Number of heads at a throw	0	1	2	3	4	5	6	7	8
Frequency	2	6	30	52	67	56	32	10	1

18. The following data represents the number of units of production per day turned out by 5 different workers using 4 different types of machines:

Workers	Machine Type			
	A	B	C	D
1	44	38	47	36
2	46	40	52	43
3	34	36	44	32
4	43	38	46	33
5	38	42	49	39

- Test whether the mean productivity is the same for the different machine types.
- Test whether the 5 workers differ with respect to mean productivity.
