LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.A.DEGREE EXAMINATION –**ECONOMICS**

THIRD SEMESTER – **NOVEMBER 2018**

EC 3503– QUANTITATIVE METHODS IN ECONOMICS

Date: 23-10-2018   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

Part- A

Answer any five questions each in about 75 words: (5 x 4= 20 marks)

1. Write a note on classical definition of probability

2. A bag contains 6 white and 4 black balls. Two balls are drawn at random one after another without replacement. Find the probability that both drawn balls are white.

3. A bag contains 5 red and 7 green balls:

   a) One ball is drawn from the bag and then replaced another ball is drawn after the replacement. Find the probability that both drawings are of red balls.

   b) Assume that the first ball is not returned to the bag. When the second ball is drawn. Find the probability that both balls of the two drawings are red.

4. Four coins are tossed simultaneously, what is the probability of getting 2 heads?

5. Distinguish between two-tailed test and one-tailed test.

6. Write a note on Chi-square test as a goodness of fit.

7. State the properties of Poisson distribution.

Part- B

Answer any Four questions each in about 250 words: (4 x10=40 marks)

8. State and prove Bayes' theorem.

9. There are two urns are containing 5 white and 4 black balls and the other containing 6 white and 5 black balls . One urn is chosen and one ball is drawn.If it is white, what is the probability that the urn is the second?

10. Write down the important properties of Binomial distribution.

11. A basket contains 20 bad oranges and 80 good oranges. Three oranges are drawn at random from this basket. Find the probability that of three i) exactly 2 ii) at least 2 and iii) utmost 2 are good oranges.

12. Explain the procedure of Testing of Hypothesis.

13. The following results are obtained from a sample of 10 boxes of biscuits :

    Mean weight of contents = 490 gms

    Standard deviation of the weight = 9 gms.

    Could the sample come from a population having a mean of 500 gms?

    [Hint: $t_{\alpha=0.01, 9df}=3.25$]

14. Compare and contrast Latin Square Design and Randomized Block Design.

Part-C

Answer any Two questions each in about 900 words: **(2 x20=40 marks)**

15. State the Addition and Multiplication theorems on Probability using suitable examples.

16. The average number of defective articles per day in a certain factory is claimed to be less than the average of all the factories. The average of all the factories is 30.5. A random sample of 100 days showed the following distribution:

Class limits	16-20	21-25	26-30	31-35	36-40
No.of days	12	22	20	30	16

Is the average less than the figure for all the Factories? [Hint: $Z_{\alpha=0.01=2.53}$]

17. 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 the die is biased?   [Hint: $\chi^2_{\alpha=0.05,5df=11.07}$]

18. Explain the steps involved in calculating ANOVA one-way classification using a suitable illustration.

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