

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034****B.A. DEGREE EXAMINATION – ECONOMICS**

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**SECOND SEMESTER – APRIL 2018****17/16UEC2MC02– QUANTITATIVE METHODS IN ECONOMICS**

Date: 26-04-2018

Dept. No. 

Max. : 100 Marks

Time: 01:00-04:00

**PART-A****Answer any FIVE Questions:****(5x4=20)**

1. Discuss the meaning and scope of statistics?
2. Define Conditional Probability.
3. A pair of the dice is thrown 4 times . If getting a doublet is considered a success, find the probability of 2 successes.
4. What is Normal distribution? Also point out the important properties of Normal Distribution.
5. What is null hypothesis and alternative hypothesis?
6. The weekly wages of 1000 workers are normally distributed around a mean Rs.70 and a standard deviation of Rs.5. Estimate the number of workers whose weekly wages will be between Rs.70 and Rs.72.
7. What are type I and type II errors?

**PART-B****Answer any FOUR Questions :****(4 x 10= 40)**

8. Calculate Mean Deviation from Median and the coefficient of mean deviation from the following data:

| Class         | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (f) | 6    | 12    | 17    | 30    | 10    | 10    | 8     | 5     | 2     |

9. Calculate Pearson's Coefficient of correlation from the following data. Take 65 and 70 as the assumed average of the variate X and Y respectively:

|   |    |    |    |    |    |    |    |    |    |    |    |
|---|----|----|----|----|----|----|----|----|----|----|----|
| X | 45 | 55 | 56 | 58 | 60 | 65 | 68 | 70 | 75 | 80 | 85 |
| Y | 56 | 50 | 48 | 60 | 62 | 64 | 65 | 70 | 74 | 82 | 90 |

10. The first of three Urns contain 7 white and 10 black balls, the second contains 5 white and 12 black balls and the third contains 17 white balls and no black balls. A person chooses an Urn at random and draws a ball from it . The ball is white. Find the probabilities that the ball comes from the i) first ii) second iii) third urn.
11. State the properties of Binomial Distribution with suitable examples.
12. A machine produced 20 defective articles in a batch of 400. After overhauling, it produced 10 defectives in a batch of 300. Has the machine improved?
13. In tests given to 2 groups of students drawn from 2 different populations, the marks obtained were as follows:

|         |    |    |    |    |    |    |    |    |    |
|---------|----|----|----|----|----|----|----|----|----|
| Group A | 18 | 20 | 36 | 50 | 49 | 36 | 34 | 49 | 41 |
| Group B | 29 | 28 | 26 | 35 | 30 | 44 | 46 |    |    |

Estimate at 5% level, if the two populations have the same variance.

14. A die is thrown 1000 times and a throw of 5 or 6 was obtained 420 times. On the assumption of random throwing, do the data indicate an unbiased die?

**PART- C**

**Answer any TWO Questions:**

**(2 x20=40)**

**15. Calculate the Mean, Median and Mode for the data given below:**

|                   |       |       |        |        |        |        |        |        |        |
|-------------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| Daily Earning Rs, | 50-53 | 53-56 | 56- 59 | 59 -62 | 62- 65 | 65- 68 | 68- 71 | 71- 74 | 74- 77 |
| No.of persons     | 3     | 8     | 14     | 30     | 36     | 28     | 16     | 10     | 5      |

**16. A Systematic sample of 100 pages was taken from the Concise Oxford Dictionary and the observed frequency distribution of foreign words per page was found to be as follows :**

|                                   |    |    |    |   |   |   |   |
|-----------------------------------|----|----|----|---|---|---|---|
| No. of Foreign words per page (X) | 0  | 1  | 2  | 3 | 4 | 5 | 6 |
| Frequency ( f )                   | 48 | 27 | 12 | 7 | 4 | 1 | 1 |

Fit a Poisson distribution.

**17. A Company arranged an intensive training course for its team of salesmen. A random of 10 salesmen were selected and the value in ( 000) of their sales made in the weeks immediately before and after the course are shown in the following data:**

|              |    |    |    |    |    |    |    |    |    |    |
|--------------|----|----|----|----|----|----|----|----|----|----|
| Salesmen     | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| Sales before | 12 | 23 | 5  | 18 | 10 | 21 | 19 | 15 | 8  | 14 |
| Sales after  | 18 | 22 | 15 | 21 | 13 | 22 | 17 | 19 | 12 | 16 |

Test whether there is evidence of an increase in mean sales.

**18. Explain the meaning of Analysis of Variance. Describe briefly the technique of one way classification of Analysis of Variance.**

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