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D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE – 1
SEMESTER EXAMINATIONS

APRIL – 2016

CAMA4B

ALLIED : STATISTICAL METHODS AND THEIR APPLICATIONS - II

Time: 3 Hrs

Max. Marks: 75

SECTION – A (10 X 2 =20)

Answer ALL the questions.

1. For the set of observations 13,25,36,22,18,45,21,26,30,22 find the range. and its coefficients.
2. Write down the merits of quartile deviations.
3. Write down the formula for Bowley's coefficient skewness.
4. Write down the formula for measures of skewness and kurtosis.
5. Define normal distribution.
6. Find moments of the Poisson distribution on expected value (Mean).
7. What are the types of large sample?
8. Write down the formula for the difference between two population's means.
9. Define ANOVA.
10. Write down the merits of Latin square design.

SECTION – B (5 X 5 =25)

Answer any FIVE of the following questions.

11. Calculate the quartile deviation from the following frequency distribution.

| | | | | | | | | |
|----------------------|----|----|----|----|----|----|----|----|
| Value of the item | 12 | 13 | 14 | 25 | 26 | 27 | 38 | 40 |
| Frequency | 2 | 3 | 5 | 8 | 7 | 3 | 2 | 1 |

12. An analysis of the monthly wages gives the following results.

| | Firm A | Firm B |
|--|---------------|---------------|
| Numbers of workers | 500 | 600 |
| Average monthly wages | Rs.186 | Rs.175 |
| Variance of the distributional of wages | 81 | 100 |

- i. Which firm has a larger wage bill?
- ii. In which firm (A or B) is there greater variability in individual wages?

13. Calculate Pearson's measures of skewness for the following data

| | | | | | | | | |
|-----------|---|----|----|----|----|----|----|----|
| Size | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Frequency | 2 | 11 | 36 | 64 | 39 | 30 | 22 | 2 |

14. For a Binomial distribution with parameters $n=5$, $p=0.3$ find the probabilities of getting.

- i) At least 3 successes ii) at most 3 successes iii) exactly 3 failures.

15. A sample of 400 male students is found to have a mean height of 171.38 cms.Can it be reasonably regarded as a sample from a large population with mean height 171.17cms and standard deviations 3.30 cms using 5 % level of significance?

16. A Sample of ten house owners is drawn and the following values of their incomes are obtained. Mean Rs.6000, standard deviations Rs.650.Test the hypothesis that the average income of house owners of the town is Rs.5500.

17. The following table gives the yields of 15 samples of plot under three varieties of seed.

| A | B | C |
|----|----|----|
| 20 | 18 | 25 |
| 21 | 20 | 28 |
| 23 | 17 | 22 |
| 16 | 15 | 28 |
| 20 | 25 | 32 |

Test using one –way classification of ANOVA whether there is a significant difference in the average yield of seeds.

18. Write down the procedure for two way classification and prepare ANOVA table.

SECTION – C (3 X 10 =30)

Answer ALL the questions.

19. a) Find the mean deviation about the mean for the following data.

| Class | 0 – 5 | 5 - 10 | 10 - 15 | 15 – 20 | 20 - 25 |
|-----------|-------|--------|---------|---------|---------|
| Frequency | 3 | 5 | 12 | 6 | 4 |

(Or)

- b) Find out Bowley's coefficient of skewness for the following data.

| | | | | | | |
|------------------------------|-----|-----|-----|----|----|----|
| Weight (in kgs) more than | 40 | 50 | 60 | 70 | 80 | 90 |
| No.of.persons | 185 | 167 | 132 | 82 | 38 | 12 |

20. a) Ten Coins are tossed 1024 times and the following frequencies observed. Compare these frequencies with the expected frequencies.

| | | | | | | | | | | | |
|-------------|---|----|----|-----|-----|-----|-----|-----|----|----|----|
| No.of heads | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Frequencies | 2 | 10 | 38 | 106 | 188 | 257 | 226 | 128 | 59 | 73 | - |

Calculate theoretical frequency.

(Or)

b) In a sample of 600 men from a certain city, 450 men are found to be smokers. In a sample of 900 men another city 450 are found to be smokers. Do the data indicate that the two cities are significantly different with respect to prevalence smoking habit among men?

21. a) An IQ test was administered to five persons before and after they were trained. The results are given below.

| Candidates | I | II | III | IV | V |
|--------------------|-----|-----|-----|-----|-----|
| IQ before Training | 110 | 120 | 123 | 132 | 125 |
| IQ after Training | 120 | 118 | 125 | 136 | 121 |

Test whether there is any change in IQ after the training programme. Use 1% level.

(Or)

b) The yield of four strains of Gallipoli wheat planted in five randomized blocks in keys per plots given bellow.

| | | BLOCKS | | | | |
|---------|---|--------|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 |
| strains | A | 32 | 34 | 34 | 35 | 36 |
| | B | 33 | 33 | 36 | 37 | 34 |
| | C | 30 | 35 | 35 | 32 | 35 |
| | D | 29 | 22 | 30 | 28 | 28 |

Test for differences between blocks and differences between strains (Subtract 30n from the given number)

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