Q.P.Code:PC224-20 (Pages: 2) Reg. No...............................

Name...................................

**M.Com DEGREE (CSS) EXAMINATION, APRIL 2024**

**Second Semester (Regular/Supplementary/Improvement - 2020 Admission Onwards)**

**Branch: Commerce**

**PG20CO209 - QUANTITATIVE TECHNIQUES**

Time: 3 hrs Max. Weightage: 30

**PART A**

**(Answer any EIGHT questions. Each question has weightage ONE**.)

1. Discuss the applications of binomial distribution.

2. What is a statistical hypothesis?

3. Explain the consumer risk of sampling inspection plan.

4. Find the probability that the number of heads lie in the range 185 and 220 when a fair coin is tossed 400 times.

5. State any two uses of 't' distribution.

6. What are the characteristics of non-parametric tests?

7. A survey of financial executives at Fortune 100 companies showed that 60% were confident that economic growth of U S would continue over the next 2 years. If the survey included 984 executives give a 95% confidence interval for the proportion of executives who are confident about US economic growth.

8. Out of 500 items selected for inspection .2% are found to be defective. Find how many lots will contain exactly no defective if there are 1000 lots.

9. Samples of 100 items have been taken for a fortnight (14 days). A total of 140 items was found to be defective. Prepare values for P chart.

10. Name the important multivariate analysis techniques.

**(8×1=8)**

**PART B**

**(Answer any SIX questions. Each question has weightage TWO.)**

11. The S. D of a sample of size 100 is 3.5 and that of a sample of size 200 is 4.1. Assuming that the samples are independently chosen from two normal populations, examine whether the standard deviations of the two populations are equal.

12. Explain the various types of control charts of variables.

13. The late arrivals of a train at Kottayam during 10 days recorded are given below. Test the hypothesis that the mean of late time is 4 minutes at 5% level of significance. Use sign test.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Days | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Late time | 3 | 2 | 2.5 | 3 | 3.5 | 4 | 4.25 | 3.75 | 3.25 | 3 |

14. A random sample of 50 people from a population showed incomes with a mean = 50000 and S.D= 6000. Estimate the population mean with (a) 95% (b) 99% confidence interval.

15. A dice is thrown 132 times with the following results. Test the hypothesis that the dice is unbiased.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number turned up | 1 | 2 | 3 | 4 | 5 | 6 | Total |
| Frequency | 16 | 20 | 25 | 14 | 29 | 28 | 132 |

16. What are the methods available for process control?

17. What are statistical techniques. State the important statistical techniques?

18. What do you mean by multivariable techniques? How are they useful to research studies?

**(6×2=12)**

**PART C**

**(Answer any TWO questions. Each question has weightage FIVE.)**

19. A random sample of pigs fed on diet A over a period gave the following values x₁ = 6, σ1= 3.08, n₁ = 8 and another sample fed on diet B gave the following values x₂ = 8, σ2 = 4.15, n₂ = 5. Test whether the diets A and B significantly differ (i) in their means (ii) in their variances.

20. Fit a normal distribution to the following frequency distribution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Class | 0-20 | 20-40 | 40-60 | 60-80 | 80-100 |
| F | 8 | 12 | 30 | 20 | 10 |

21. The following table shows sample retail prices of three brands of perfume. Use the Kriskal Wallis test to determine whether there is any difference among the retail prices of the brands throughout the state of Kerala. Use 1% level of significance for test.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Brand 1 | 90 | 91 | 93 | 82 | 77 | 89 | 86 | 96 | 98 | 87 | 99 |
| Brand 2 | 79 | 94 | 82 | 88 | 90 | 72 | 91 | 97 | 83 | 86 |  |
| Brand 3 | 81 | 89 | 87 | 86 | 80 | 81 | 85 | 86 | 91 | 93 |  |

22. Achievement test scores of trainees under three methods of instruction are given below.

Methods Scores

A 82 71 73 68 81

B 90 86 88 76 85

C 85 76 84 71 84

At 5% level of significance verify whether the three sample means are the same?

**(2×5=10)**

**(END OF QUESTION PAPER)**