QP CODE: G 5629

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Reg No : .....

Name : .....

M.COM DEGREE (CSS) EXAMINATION , MAY 2021

Second Semester

CORE - CM010204 - QUANTITATIVE TECHNIQUES

M.COM FINANCE AND TAXATION,M.COM MANAGEMENT AND INFORMATION TECHNOLOGY, M.COM MARKETING AND INTERNATIONAL BUSINESS

2019 Admission (For Private Candidates)

B584403D

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Bring out the limitations of Quantitative Techniques.
2. ABC Ltd. manufactures toy cars of which 0.1 percent is usually defective. The firm packs them in cases each containing 500 toy cars. If a wholesaler purchases 10 such cases, how many of them are expected to contain one defective item?
3. Write down the density function of the Normal Distribution stating the parameters therein.
4. In a sample of 500 people in Kerala in 280 are tea drinkers and the rest are coffee drinkers. Can we assume that both coffee and tea are equally popular in this State at 1 % level of significance?
5. A random sample of 20 pairs of observation from a normal population gives a correlation coefficient 0.42. Is the correlation significant?
6. Bring out the characteristics of chi-square test.
7. Write a note on Paired Sample Sign Test.
8. Explain random variation.
9. What is multi-variate analysis?
10. When do we use MANOVA?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. A box containing 100 transistors, 20 of which are defective, 10 are selected for inspection. Indicate what is the probability that (i) all 10 are defective (ii) 10 are good (iii) at least one defective and (iv) at most three are defective?

12. In a manufacturing organization, the distribution of wages was perfectly normal and the number of workers employed in the organization was 5000. The mean wages of the workers were calculated at Rs.800 pm and standard deviation was worked out to Rs.200.On the basis of the following information, estimate: (i) The number of workers getting salary between Rs.700 and Rs.900. (ii) Percentage of workers getting salary above Rs.1000. (iii) Percentage of workers getting salary below Rs.600.

13. Of 500 people selected at random from a town 275 are drinkers of tea and others are drinkers of coffee. On the basis of these findings can you conclude that the tea and coffee are equally popular in that town?

14. A sample of 900 has a mean of 3.4 and standard deviation of 2.61. Obtain the 95 % confidence limits of population mean.

15. Three varieties of A, B, C wheat were sown in 4 plots each and the following yields in quintals per acre were obtained.

	Varieties		
Plots	A	B	C
1	10	9	4
2	6	7	7
3	7	7	7
4	9	5	6

Find out whether there is a significant difference between the mean yields of the three varieties.

16. In a cross between whilte flowered and yellow flowered plants it was found that of the 452 flowers obtained 119 were yellow and rest white.Is this consistent with the hypothesis that white and yellow flowers are in the ratio 3:1?

17. Draw a suitable control chart for the following data pertaining to the number of foreign coloured threads (considered as defects) in 15 pieces of cloths of 2m x 2m in a certain make of synthetic fibre and state your conclusions.
7, 12, 3, 20, 21, 5, 4, 3, 10, 8, 0, 9, 6, 7, 20

18. Explain the various types of multi-variate analysis techniques.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. As a tailor prepared suits for a number of his customers after the preliminary trials and retails, he had to alter the suits as follows:
By applying Poisson distribution, calculate the theoretical frequencies.

No of trials after preliminary trial	0	1	2	3
No. of cases	200	75	20	5

20. From the following data relating to the production of steel pipes by 4 different machines, examine by ANOVA technique whether the machine means could be treated as constant or not. (The details of diameters in inches of various samples of the four screw types are presented)

P	15	16	17	17	18	19	14	17	21	14
Q	17	16	15	15	14	16	16	13	13	12
R	21	20	24	27	24	26	21	25	27	23
S	18	20	19	17	18	16	16	14	14	12

21. Out of a sample of 120 persons in a village, 76 persons were administered a new drug for preventing influenza and out of them, 24 person were attacked by influenza. Out of those who were not administered the new drug, 12 persons were not affected by influenza.
Prepare :

1. 2 x 2 table showing actual and expected frequencies
2. Use Chi- square test for finding out whether the new drug is effective or not.

(At 5% level for one degree of freedom, the value of chi square is 3.84.)

22. The mean and range of observations relating to 6 samples of size 10 relating to a production process are given below. Advise the quality control manager using mean and range charts.
Use for n=10 A2 = 0.308, D3 = 0.223, D4= 1.777

Samples	1	2	3	4	5	6
Mean	11.6	17.4	14.8	13.8	13.9	16.6
Range	14.1	19.1	22.9	18	14.6	21

(2×5=10 weightage)