



QP CODE: 22000510



Reg No :

Name :

M.COM DEGREE (CSS) EXAMINATION , JANUARY 2022

Second Semester

CORE - CM010204 - QUANTITATIVE TECHNIQUES

M.COM FINANCE AND TAXATION, M.COM FINANCE AND TAXATION (SF), M.COM
MANAGEMENT AND INFORMATION TECHNOLOGY (SF), M.COM MARKETING AND
INTERNATIONAL BUSINESS (SF), M.COM MASTER OF COMMERCE AND MANAGEMENT

2019 Admission Onwards

9EC45D73

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. List out the functions of Quantitative Techniques.
2. Eight unbiased coins are tossed simultaneously. What is the probability of getting no heads at all?
3. How do you approximate Binomial distribution to Normal Distribution?
4. Distinguish between parametric and non-parametric hypothesis
5. What is statistical estimation?
6. Bring out the characteristics of chi-square test.
7. The values in one samples are 53,38,69,57,46,39,73,48,73,74,60 and 78. In another sample they are 44,40,61,52,32,44,70,41,67,72,53 and 72. Test at the 10% level the hypothesis that they come from populations with the same mean. Use non-parametric test.
8. Which variation is more grave in SQC?
9. What is multiple regression?
10. What is multiple factor analysis?

(8×1=8 weightage)





Part B (Short Essay/Problems)

Answer any **six** questions.

Weight 2 each.

11. If 5% of the items produced turn out to be defective, then find out the probability that out of 20 items selected at random there are: i) Exactly three defectives ii) at least two defectives, iii) exactly four defectives iv) find the mean and variance.
12. In an intelligence test administered to 1000 students, the average score was 42 and standard deviation 24. Find (i) the number of students exceeding a score of 50, (ii) the number of students lying between 30 and 54, (iii) the value of score exceeded by the top 100 students
13. A stenographer claims that she can take dictations at the rate of more than 120 words per minute. Of the 12 tests given to her she could perform an average of 135 words with a standard deviation of 40. Is her claim valid. ($\alpha = 0.01$)
14. In a sample of 10 observations the sum of the squared deviations of items from the mean was 101.7. In another sample of 8 observations the value was found to be 94.5. Test whether the difference is significant at 5% level. ($V_1 = 7$ and $V_2 = 9$. Degrees of freedom is 3.29) ($V_1 = 8$ and $V_2 = 10$. Degrees of freedom is 3.07)
15. The table below gives the yield of wheat in six blocks of land.

	Blocks					
Variety	1	2	3	4	5	6
A	12	16	15	17	20	25
B	14	12	20	22	18	23
C	11	14	18	15	21	18
D	7	11	15	12	19	16

Test the significance of difference between the yields of four varieties.

16. The figures below are (a) the frequencies of a distribution and (b) the frequencies of the normal distribution having the same mean, standard deviation and total frequency as in (a).

a	1	12	66	220	495	792	924	792	495	220	66	12	1
b	2	15	66	210	484	799	944	799	484	210	66	15	2

Apply Chi-Square test of Goodness of Fit.

17. In a factory a packing machine packs curry powder of 100 gram weight. The quality control manager takes a sample of 8 packets each day. The mean and range of data recorded for 10 days are given below. Help





the quality control manager to decide whether any corrective action is required by preparing mean chart.
Given A_2 for $n=8$ is 0.373

Day	1	2	3	4	5	6	7	8	9	10
Mean	100	101	99.5	100.5	100.6	102	100.5	103	99.3	100.5
Range	4	3	5	6	4	2	3	4	3	2

18. Explain the variables in multi-variate analysis.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any **two** questions.

Weight **5** each.

19. (a) 15000 students appeared for an examination. The mean marks were 49 and the standard deviation of marks was 6. Assuming the marks to be normally distributed, what proportion of students scored more than 55 marks? (b) If in the same examination, Grade 'A' is to be given to students scoring more than 70 marks, what proportion of the students will receive 'Grade A'?
20. The percentage of defective parts turned out by the same machine on two consecutive days are 8 and 6. If 500 parts are turned out on each of the two days, would it be justified to claim that the quantity has improved? ($\alpha = 0.01$)
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 :

- 2 x 2 table showing actual and expected frequencies
- 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. A ball producing company recorded the number of defective balls from samples of 100 obtained during each month of a year. Give advice to the quality control manager regarding the requirement for process adjustment.

Months	1	2	3	4	5	6	7	8	9	10	11	12
Defectives	15	16	14	18	20	16	18	12	19	15	16	14

(2×5=10 weightage)

