

QP CODE: F 4800



Reg No : .....

Name : .....

**M.Com DEGREE (CSS) PRIVATE EXAMINATION, NOVEMBER 2023**

**Second Semester**

Faculty of Commerce

COMMERCE

**CORE - CM010204 - QUANTITATIVE TECHNIQUES**

2019 ADMISSION ONWARDS

23F37E2E

Time: 3 Hours

Weightage: 30

*Instructions: (Applicable for 2020 Admission Onwards) This question paper contains two sections. Answer section I questions in the answer book provided. Section II Internal examination questions must be answered in the question paper itself. Follow the detailed instructions given under section II.*

**SECTION I**

**Part A (Short Answer Questions)**

*Answer any **eight** questions.*

*Weight **1** each.*

1. The probability that a batsman scores a century in a cricket match is  $\frac{1}{3}$ . Find the probability that out of 10 matches, he may score century in exactly two matches.
2. If the mean of a poisson distribution is 1.5, find mode and standard deviation.
3. In a normal distribution, find  $P(-2.25 \leq z \leq 2.62)$ .
4. What is sampling error?
5. A certain stimulus administered to each of the 12 patients resulted in the following increase of blood pressure 5, 2, 8, -1, 3, 0, -2, 1, 5, 0, 4, 6. Can it be concluded that the stimulus will, in general be accompanied by an increase in blood pressure?
6. Write short note on Goodness of fit.
7. What are the Expected Frequencies of 2 x 2 contingency table given below  

a	b
c	d
8. List any two limitations of SQC.
9. What is multiple regression?
10. What is MANOVA?

(8×1=8 weightage)





### Part B (Short Essay/Problems)

Answer any **six** questions.

Weight 2 each.

11. What do you mean by Quantitative Techniques? Explain how Quantitative Techniques is useful in Business and Industry.
12. What is Normal distribution? Describe its properties in detail. Bring out its importance in statistics.
13. A college conducts both day and night classes intended to be identical. A sample of 100 day students yield examination results are: Mean = 72.4, SD =14.8. A sample of 200 night students yields examination results as under. Mean = 73.9, SD = 17.9. Are the two means statistically equal at 10% level?
14. Explain the steps for testing equality of two proportions.
15. If  $r_1 = 0.6$  &  $r_2 = 0.5$ ,  $n_1 = 9$  &  $n_2 = 12$ . Apply z test to determine the significance of two correlation.
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. Explain 'np' chart. How will you interpret 'np' chart?
18. What is the significance of multi-variate analysis?

(6×2=12 weightage)

### Part C (Essay Type Questions)

Answer any **two** questions.

Weight 5 each.

19. The marks of the students are normally distributed. 10% get more than 75 marks and 20% get less than 40 marks. Find the mean and standard deviation of the distribution.





20. The following data present the number of units of production per day turned out by 5 different workers using 4 different types of machines.

Workers	Machine types			
	A	B	C	D
1	22	19	24	18
2	23	20	26	22
3	17	18	22	16
4	22	19	23	17
5	19	21	45	20

- (a) Test whether the mean productivity is the same for the different machine types.  
(b) Test whether the 5 men differ with respect to mean productivity.

21. The following are the kilometres per gallon which a test driver got for ten tanksful each of three kinds of gasoline:

Gasoline A - 30, 41, 34, 43, 33, 34, 38, 26, 29, 36

Gasoline B - 39, 28, 39, 29, 30, 31, 44, 43, 40, 33

Gasoline C - 29, 41, 26, 36, 41, 43, 38, 38, 35, 40

Use the Kruskal-Wallis test at the Level Of Significance  $\alpha = 0.05$  to test the null hypothesis that there is no difference in the average kilometre yield of the three types of gasoline.

22. You are given the values of sample means and the range for 10 samples of size 5 each. Draw Mean and Range charts and comment on the state of control of the process.

Sample	1	2	3	4	5	6	7	8	9	10
Mean	43	49	37	44	45	37	51	46	43	47
R	5	6	5	7	7	4	8	6	4	6

(2×5=10 weightage)

