

Code No.: 8195

Sub. Code: C 14 K

**M.Com. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2008.**

First Semester

Commerce

QUANTITATIVE TECHNIQUES

(For those who joined in July 2008 onwards)

Time: Three hours

Maximum : 75 marks

PART A - (10 x 1 = 10 marks)

Answer ALL questions in about 50 words each.

1. Define control chart for variable.
2. Define control chart for attributes.
3. State the ingredients of a decision problems.
4. What do you mean by optimal decisions?
5. Differentiate one-way classification from two-way classification.
6. What are the merits of non-parametric tests?
7. Differentiate one-tailed test from two-tailed test.
8. What is Type I Error and Type II Error?
9. What is theoretical distribution?
10. State the importance of probability.

PART B - (5 x 5 = 25 marks)

Answer ALL questions in about 250 words each choosing either (a) or (b).

11. (a) A coin is tossed six times. What is the probability of obtaining four or more heads?

Or

(b) In a town 5 accidents took place in a span of 25 days. Assuming the number of accidents per day follows the Poisson distribution, find the probability that there will be three or more accidents in a day.

12. (a) For a random sample of size 10 from a normal population the mean is 12.1 and the standard deviation is 3.2. Is it reasonable to support that the population mean is 14.5? Test at 5% level of significance [$t_{0.05}$ at g.d.f. = 1.833].

Or

(b) A sample of 400 male students is found to have a mean height of 171.38 cm. Can it be reasonably regarded as a sample from a large population with mean height 171.17 cm and standard deviation 3.30 cm.?

13. (a) What are the advantages of parametric tests?

Or

(b) How do you test a hypothesis by applying Mann Whitney 'u' test?

14. (a) A baker has studied his record and noticed that for the past 300 days in the year, the demand for his product has varied as follows:

Demand ('000 units) :	5	6	7	8	9
Number of days :	20	60	80	120	20

What is the expected demand for the product?

(b) A.T.V. dealer finds that cost of holding a T.V. in a stock a week is 30 and cost of unit shortage is Rs.70. For one particular model of T.V., the probability distribution of weekly sales is as follows:

Weekly sales:	0	1	2	3	4	5	6
Probability:	0.05	0.10	0.20	0.25	0.20	0.15	0.05

How many units per week should the dealer order?

15. (a) Ten pieces of cloth out of different rolls of equal length contained the following number of defects:

1, 3, 5, 0, 6, 0, 9, 4, 4, 3.

Draw a control chart for the number of defects and state whether the process is in a state of statistical control.

Or

(b) Point out the merits and demerits of statistical quality control.

PART C - (5 x 8 = 40 marks)

Answer ALL questions choosing either (a) or (b) in about 500 words each.

16. (a) The number of defects per unit in a sample of 330 units of manufactured product was found as follows:

No. of defects :	0	1	2	3	4
No. of units :	214	92	20	3	1

Fit a Poisson distribution to the data.

Or

(b) If a large group of men 5 percent are under 60 inches in height and 40 percent are between 60 and 65 inches. Assuming a normal distribution, find the mean height and standard deviation.

17. (a) Two types of drugs were used on 5 and 7 patients. For reducing their weight. Drug A was imported and drug B indigenous. The decrease in weight after using the drugs for six months was as follows.

Drug A :	10	12	13	11	14		
Drug B :	8	9	12	14	15	10	9

Is there a significant difference in the efficacy of the two drugs?

Or

(b) A test taken by two groups of boys and girls gave the following information:

	Mean score	SD	Number
Girls	75	10	100
Boys	70	12	200

On the basis of the above information would you conclude that mean scores of boy and girls are statistically significant?

18. (a) The demand for a particular spare parts in a factory was found to vary from day-to-day. In a sample study the following information was obtained.

Days :	Mon	Tues	Wed	Thur	Fri	Sat
No. of parts demanded :	1124	1125	1110	1120	1126	1115

(b) A certain product is manufactured at Rs.100 and sold at Rs.150 per unit. The product is such that if it is produced and not sold within a weeks time it becomes worthless. The weekly sales record in the past is as follows:

Demand per week :	20	21	22	23
Number of weeks each sales level was recorded :	20	35	80	15

Prepare a table of expected pay-off and indicate the optimum output level.

Test the hypothesis that the number of parts demanded does not depend on the day of the week [the table value of χ^2 for 5 d.f. at 5% level of significance is 11.07].

Or

(b) Perform a two-way anova on the data given below :

Plot of land	Treatment			
	A	B	C	D
I	38	40	41	39
II	45	42	49	36
III	40	38	42	42

19. (a) Explain the construction and uses of C-chart and P-chart.

Or

(b) What are the objectives of an acceptance sampling plan? What procedure should be adopted for selecting a plan?

20. (a) Distinguish between decision making under risk and decision making under uncertainty.