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Exam. Code : 0501

Master of Commerce Ist Semester

1128

QUANTITATIVE METHODS FOR BUSINESS

(Same for USOL Candidates)

Paper–M.C.-102

Time Allowed : 3 Hours] **[Maximum Marks : 80**

Note :– Attempt any **FIVE** questions in all, selecting at least **ONE** question from each Unit.

UNIT–I

1. (a) What do you understand by Normal distribution and discuss its properties and graph ?

   (b) The income of a group of 10,000 persons was found to be normally distributed with Rs. 750 p.m. and standard deviation = Rs. 50. Show that of this group about 95% had income exceeding Rs. 668 and only 5% had income exceeding Rs. 832. What was the lowest income among the richest 100? 16

2. (a) What is Bayes Theorem and discuss its expression ?

(b) Find the probability that in a random arrangement of the letters of the word ASSASSINATION, the four S's come consecutively? 16

3. (a) Discuss properties of binomial distribution and prove that mean of the binomial distribution is np and standard deviation $\sqrt{npq}$.

(b) A bag contains 10 white and 6 black balls; balls are successively drawn out and not replaced. What is the probability that they are alternately of different colours? 16

UNIT–II

4. (a) Explain the procedure generally followed in testing of hypothesis. Point out difference between one tail and two tail tests.

(b) A wholesaler in apples claims that only 4% of the apples supplied by him are defective. A random sample of 600 apples contains 36 defective apples. Test the claim of the wholesaler. 16

5. (a) What do you mean by estimation? Discuss the property of estimation difference between point and interval estimation.

(b) Explain the central limit theorem and its usefulness.

(c) A sample of 400 male students is found to have mean height of 171.38 cm. Can it be reasonably regarded as sample from large population with mean height 171.14 cm and standard deviation 3.30 cm ? 16

6. (a) Differentiate the following pairs of concepts :

(i) Null and alternative hypothesis

(ii) Statics and parameters.

(b) How does the standard error of mean measure sampling error ? Is the amount of sampling error in the sample mean affected by the amount of variability in the universe ? Explain. Why is it important to consider sampling error ? 16

UNIT–III

7. (a) What do you mean by analysis of variance ? Explain the technique of analysis of variance for two way classification of data ?

(b) Two samples are drawn from two normal populations. From the following data test whether the two samples have the same variance at 5% level.

Sample 1 : 60 65 71 74 76 82 85 87

Sample 2 : 61 66 67 85 78 63 85 86 88 91 16

8. (a) Outline the procedure for large sample tests and discuss their theoretical basis. Comment on the assumptions made.

(b) In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers ? [State the hypothesis clearly]. 16

UNIT–IV

9. (a) Discuss the basic principles underlying the control charts. Explain in brief how control limits are determined for (i) mean chart and (ii) range chart.

(b) An inspection of 10 samples of size 400 each from 10 lots revealed the following no. of defective units : 17, 15, 14, 26, 9, 4, 19, 12, 9 and 15. Calculate control limits for the no. of defective units and state your conclusion. 16

10. (a) What do you understand by Statistical Quality Control (SQC) ? Discuss briefly its need and utility in industry. Discuss the causes of variation in quality.

(b) What is meant by statistical decision theory ? How is it different from other method used in decision making ? 16