Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **16MA2003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **QUANTITATIVE TECHNIQUES** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Given and, find  . Also verify that . | CO1 | 10 |
| b. | Solve the following equations by Cramer’s method  . | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | A man buys 12 kg of sugar, 10 kg of pulses and 5 kg of salt. Sugar costs ₹17 per kg, pulses cost ₹15 per kg and salt ₹12 per kg. Using matrix multiplication, determine the total amount spent by the man. | CO1 | 10 |
| b. | Ifand.  Verify that. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Venn diagram shows all possible logical relations between finite collections of different sets. Do you agree? Discuss the different operations on set. | CO1 | 10 |
| b. | In a survey of 2000 mobile users it was found that 1700 users liked Nokia and 1500 users liked Motorola. What is the least number that must have liked both the products? | CO1 | 10 |
| **(OR)** | | | | |  |  | CO1 |
| 4. | a. | Calculate rate of interest if the sum Rs.5000 grows to Rs.8000 in 4 years at simple interest. | CO1 | 10 |
| b. | Calculate Compound interest and Amount for the investment of ₹15000 @ 9% p.a., for 6 years and interest compounded annually. | CO1 | 10 |
|  |  |  |  |  |
| 5. | a. | Illustrate the need of statistics in today’s business environment. | CO2 | 10 |
| b. | The raw data for the variable “amount of money spent in the restaurant” collected from 10 customers are given below:  100,610,650,850,210,890,750,990,875,700.  Construct a frequency distribution and presentation of data by means of bar chart. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | Explain the importance of Pie chart and frequency polygon in diagrammatic presentation of data with suitable examples. | CO2 | 10 |
| b. | Draw both the ogive curves and estimate its median value for the following data.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Profit range | 0 - 15 | 15 - 30 | 30 - 45 | 45 - 60 | 60 - 75 | | No. of companies | 3 | 7 | 18 | 5 | 2 | | CO2 | 10 |
|  |  |  |  |  |
| 7. |  | Identify the mean, median and mode for the continuous class frequency distribution given below:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Class | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | | Frequency | 6 | 8 | 10 | 14 | 6 | 3 | | CO2 | 20 |
| **(OR)** | | | | |
| 8. | a. | Find the first, second, and third quartile for the below data set:  15,22,41,67,16,26,45,68,17,27,47,69,19,31,53,74,20,34,56,76,18,30,  52,72. | CO2 | 10 |
| b. | Index numbers are the tools for describing the change of the values of the variables. Illustrate the types of Index with appropriate examples. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Find the 14th and 83rd percentile of the frequency distribution given:   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Class | 1-2 | 2-3 | 3-4 | 4-5 | 5-6 | 6-7 | 7-8 | 8-9 | | Frequency | 9 | 10 | 14 | 17 | 19 | 16 | 11 | 4 | | CO2 | 10 |
| b. | Define time series and explain the various components of time series. | CO3 | 10 |