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



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

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|  |  |  |  |
| **Code :** | **17MA2022** | **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. | Find the rank of. | CO1 | 10 |
| b. | Solve the following equations by Cramer’s rule.  . | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Find the inverse of the matrix . | CO1 | 10 |
| b. | Ram, Shyam and Mohan purchased biscuits of different brand P,Q and R. Ram purchased 10 packets of P, 7 packets of Q and 3 packets of R. Shyam purchased 4 packets of P, 8 packets of Q and 10 packets of R. Mohan purchased 4 packets of P, 7 packets of Q and 8 packets of R. If brand P cost Rs.4 each, Q costs Rs.5 and R costs Rs.6 each, then using matrix operation, find the amount of money spent by these person individually. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | If, , and. Prove that;  (i)  (ii)  (iii) . | CO2 | 10 |
| b. | If A, B and C are any three sets then use Venn diagrams to prove that  (i)  (  ii) . | CO2 | 10 |
| **(OR)** | | | | |  |  | CO1 |
| 4. | a. | Find the simple interest on Rs. 7000 for 4 year at 6% p.a. Also find the amount at the end of 4 years. | CO3 | 5 |
| b. | A person has two daughters A and B aged 13 and 16 years. He has Rs.40000 with him now but wants that both of them should get an equal amount when they are 20 years old. How he should divide the money if it were to be deposited in a bank giving 9% compound interest per annum? | CO3 | 15 |
|  |  |  |  |  |
| 5. | a. | Represent the following data of investment pattern in the five year plan by a pie diagram.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Item | Agriculture | Irrigation | Organized  Industries | Transport | Social  Services | Inventories | | Investment  (in %) | 14 | 16 | 29 | 17 | 16 | 8 | | CO4 | 10 |
| b. | Draw a multiple and sub-divided bar diagrams for the following data.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Year | 2012 | 2013 | 2014 | 2015 | 2016 | | Sale (‘000) | 100 | 120 | 130 | 150 | 160 | | Gross Profit (‘000) | 30 | 40 | 45 | 50 | 60 | | Net Profit (‘000) | 10 | 15 | 25 | 25 | 30 | | CO4 | 10 |
| **(OR)** | | | | |
| 6. | a. | Draw a histogram and less than Ogive curve for the following data.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Profits (Rs. Crores) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | | No. of Companies | 3 | 9 | 15 | 30 | 18 | 5 | | CO4 | 10 |
| b. | The marks scored by 50 students in Accountancy examination paper are given below.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 78 | 25 | 25 | 50 | 30 | 29 | 55 | 52 | 43 | 43 | | 44 | 20 | 48 | 44 | 43 | 58 | 36 | 46 | 48 | 47 | | 56 | 60 | 31 | 47 | 53 | 65 | 68 | 73 | 59 | 12 | | 34 | 74 | 79 | 20 | 16 | 70 | 65 | 39 | 60 | 45 | | 60 | 20 | 47 | 49 | 51 | 38 | 49 | 35 | 52 | 61 |   Construct a frequency distribution. | CO4 | 10 |
|  |  |  |  |  |
| 7. | a. | Calculate 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 | | CO4 | 20 |
| **(OR)** | | | | |
| 8. | a. | Calculate mean deviation from the following data.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | X | 2 | 4 | 6 | 8 | 10 | | f | 1 | 4 | 6 | 4 | 1 | | CO4 | 5 |
| b. | From the prices of shares X and Y given below. State which share is more stable in value?   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X | 55 | 54 | 52 | 53 | 56 | 58 | 52 | 50 | 51 | 49 | | Y | 108 | 107 | 105 | 105 | 106 | 107 | 104 | 103 | 104 | 101 | | CO4 | 15 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Calculate the trend value by the method of least squares for the following data. Estimate the likely production for the year 2017.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | | Production(Tonnes) | 12 | 10 | 14 | 11 | 13 | 15 | 16 | | CO5 | 15 |
| b. | Construct an index number for 2018 taking 2017 as base year.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Commodity | A | B | C | D | E | F | | Price in 2017 (Rs.) | 20 | 30 | 10 | 25 | 40 | 50 | | Price in 2018 (Rs.) | 25 | 30 | 15 | 35 | 45 | 55 | | CO6 | 5 |