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



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

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|  |  |  |  |
| **Code :** | **19MS3004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **QUANTITATIVE TECHNIQUES FOR MANAGEMENT** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | | **Questions** | **Course Outcome** | | | **Marks** |
| 1. | a. | | Determine the Mean, Median and Mode from the following frequency distribution.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Class | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | | Frequency | 45 | 46 | 43 | 67 | 56 | 45 | | CO1 | | | 20 |
| **(OR)** | | | | | | | |
| 2. | | a. | Statistics is the science concerned with developing and studying methods for collecting, analyzing, interpreting and presenting empirical data – Comment. | | | CO2 | 10 |
| b. | The frequency distribution of (per day) salary among the rural household in Karunya Nagar is provided below. Depict the data in to a suitable chart. Present your inferences by comparing the salary of various classes to understand the spending behavior of the rural household.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Class | 150-250 | 250-350 | 350-450 | 450-550 | 550-650 | 650-750 | | Frequency | 6 | 8 | 10 | 14 | 6 | 3 | | | | CO1 | 10 |
|  | |  |  | | |  |  |
| 3. | | a. | Find the third, fifth and ninth deciles for the given data set.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Class | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | | Frequency | 3 | 6 | 10 | 12 | 16 | 12 | 9 | 6 | 2 | | | | CO3 | 10 |
| b. | 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 | | | | CO3 | 10 |
| **(OR)** | | | | | | | |
| 4. | | a. | State Chebyshev’s Theorem. Illustrate the empirical rule using the normal curve. | | | CO5 | 10 |
| b. | The price of the shares of BHEL and ITC during the month of March 2013 is given below. Find which firm may be considered as more consistent.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Days | 1 | 4 | 5 | 6 | 7 | 8 | 11 | 12 | 13 | | BHEL-Price | 201 | 200 | 199 | 203 | 206 | 208 | 206 | 201 | 197 | | Price of ITC | 291 | 293 | 293 | 287 | 292 | 298 | 298 | 299 | 302 | | | | CO4 | 10 |
|  | |  |  | | |  |  |
| 5. | |  | Calculate karl Pearson’s Coefficient of skewness from the data given below:   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Value | 10 | 20 | 30 | 40 | 50 | 60 | 70 | | Freq | 1 | 5 | 12 | 22 | 17 | 9 | 4 | | | | CO5 | 20 |
| **(OR)** | | | | | | | |
| 6. | | a. | Define Probability. Explain the types of Probability with real time examples. | | CO4 | | 10 |
| b | Explain the multiple applications of statistics in business. | | CO1 | | 10 |
|  | |  |  | |  | |  |
| 7. | |  | Ten newly recruited engineers of Prudential Technology Solutions are given an intensive 3 months training on two topics, namely Design of algorithm and Project management. At the end of the training, the ten engineers took a test for both the topics. The ranks obtained by them in both the tests are given in table below. Using the Spearman rank coefficient of correlation, find if there is any relationship between the marks scored in design of algorithm and project management.  Rank of the score in two tests   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Newly recruited engineers | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | Algorithm score rank (X) | 5 | 10 | 6 | 1 | 8 | 2 | 9 | 3 | 4 | 7 | | Project Mgt Score rank (Y) | 1 | 6 | 2 | 7 | 4 | 5 | 8 | 9 | 10 | 3 | | | CO6 | | 20 |
| **(OR)** | | | | | | | |
| 8. | | a. | Find the Correlation Coefficient between the weights of fathers and sons from the following data.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Weights of fathers (kg) | 65 | 66 | 67 | 68 | 69 | 70 | 71 | | Weights of sons (kg) | 67 | 68 | 66 | 69 | 72 | 72 | 69 | | | CO6 | | 15 |
| b. | Describe the procedure for hypothesis testing for F statistics. | | CO6 | | 5 |
|  | | | **Compulsory**: | |  | |  |
| 9. | |  | In an industry, 200 workers employed for a specific job, were classified according to their performance and training received / not received to test the independence of a specific training and performance. The data is summarized as follows:   |  |  |  |  | | --- | --- | --- | --- | |  | Performance | | Total | |  | Good | Not Good |  | | Trained | 100 | 50 | 150 | | Untrained | 20 | 30 | 50 | | Total | 120 | 80 | 200 |   Use Chi-Square test of independence at 5% level of significance and state your conclusion.  Extract of Chi Square table is given below:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Degree of freedom | Level of Significance | | | | |  | 0.20 | 0.10 | 0.05 | 0.02 | | 1 | 1.642 | 2.706 | 3.841 | 5.412 | | 2 | 3.219 | 4.605 | 5.991 | 7.824 | | 3 | 4.642 | 6.251 | 7.815 | 9.837 | | 4 | 4.989 | 7.779 | 9.488 | 11.668 | | | CO5 | | 20 |