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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **18MS3004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **QUANTITATIVE TECHNIQUES FOR MANAGEMENT** | **Max. marks :** | **100** |

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

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| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Statistics is the science concerned with developing and studying methods for collecting, analyzing, interpreting and presenting empirical data. | CO1 | 10 |
| b. | A survey was taken to identify the number of mobile phones in a house among 50 households in a gated community. The result of the survey is shown in table below. Calculate the median.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Number of mobile phones in a house | 1 | 2 | 3 | 4 | 5 | | Number of houses | 8 | 12 | 15 | 10 | 5 | | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | The following table shows the expenditure of a family in a month. Represent the data using a appropriate chart.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ­­­Item | Amount (Rs.) | Item | Amount (Rs.) | Item | Amount (Rs.) | | Rent | 1475 | Clothes | 640 | Fuel | 975 | | Electricity | 435 | Food | 2500 | Education | 1650 | | Loan repayment | 1725 | Others | 800 |  |  | | CO1 | 10 |
| b. | The following table shows the frequency distribution of the weekly wages of workers in a factory. Find the modal age of the workers in this factory.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Weekly wages | 50-55 | 55-60 | 60-65 | 65-70 | 70-75 | 75-80 | 80-85 | 85-90 | | No of workers | 5 | 20 | 10 | 10 | 9 | 6 | 12 | 8 | | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Find the third, fifth, and ninth decile 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 | | CO1 | 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 | | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | ABDC limited is a leading marketer for fast moving consumer goods. Below is the details of visits to retail outlets by salesmen. Calculate the standard deviation of such outlets visited by each sales man.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Number of salesman visiting the outlets | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | | Frequency | 5 | 10 | 15 | 15 | 10 | | CO2 | 15 |
| b. | Explicate the role of skewness and kurtosis in measurement of shape | CO2 | 5 |
|  |  |  |  |  |
| 5. | a. | Write short notes on Marginal, Joint and Conditional Probability with an example. | CO2 | 5 |
| b. | One ball is drawn at random. Find the probability that the no of ball drawn will be   1. Multiple of 5 or 7   ii) Multiple of 3 or 7 | CO2 | 10 |
| c. | Briefly describe Poisson Discrete Probability Distribution. | CO2 | 5 |
| (OR) | | | | |
| 6. | a. | Describe the procedure for hypothesis testing for F statistics. | CO2 | 10 |
| b. | 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 | | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Smoothing techniques are used to smooth out the random variations due to irregular variations. Elucidate the various types of smoothing techniques | CO3 | 10 |
| b. | The following data relate to marketing expenditure in lakhs of rupees and the corresponding sales of a product in crores of rupees. Estimate the marketing expenditure to attain a sales target of Rs. 40 crores. Also find the coefficient of correlation between marketing expenditure and sales.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Marketing exp | 10 | 12 | 15 | 20 | 23 | | Product Sales | 14 | 17 | 23 | 21 | 25 | | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | The marketing manager of a large super-market chain would like to use shelf space to predict the sales. A random sample of 10 stores is selected, with the following data.   |  |  |  | | --- | --- | --- | | Store | Shelf Space(X)(Feet) | Weekly Sales(Y)(No of Units) | | 1 | 5 | 160 | | 2 | 5 | 220 | | 3 | 5 | 180 | | 4 | 10 | 190 | | 5 | 10 | 240 | | 6 | 10 | 260 | | 7 | 15 | 230 | | 8 | 15 | 270 | | 9 | 15 | 290 | | 10 | 15 | 260 |  1. Find the correlation between Shelf Space and Weekly Sales 2. Find the Regression Coefficient(b1=Slope) and interpret its meaning | CO3 | 15 |
|  | b. | Discuss the significance of Central limit theorem. | CO3 | 5 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the procedures for hypothesis testing. | CO3 | 5 |
| b. | 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 | | CO3 | 15 |