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



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

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|  |  |  |  |
| **Code :** | **17BC2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BUSINESS STATISTICS** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain the four types of classification of data with suitable examples. | CO1 | 10 |
| b. | Draw a histogram, frequency polygon and frequency curve on the basis of the following data. Estimate the value of mode.   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Production  in tonnes | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | | No. of  Labourers | 8 | 18 | 23 | 37 | 47 | 26 | 6 | 5 | | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Marks scored by 30 students are given below.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 41 | 55 | 48 | 47 | 53 | 48 | 33 | 32 | 42 | 55 | | 44 | 38 | 60 | 65 | 71 | 80 | 41 | 53 | 47 | 48 | | 55 | 20 | 31 | 34 | 42 | 51 | 35 | 30 | 26 | 25 |   Convert the marks into a series of a class interval of 10. | CO2 | 8 |
| b. | Draw both the ogive curves and determine the number of companies getting profits between Rs. 45 crores and Rs. 75 crores.   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Profits (Rs.Crores) | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | | No. of  Companies | 8 | 12 | 20 | 24 | 15 | 10 | 7 | 3 | 1 | | CO2 | 12 |
|  |  |  |  |  |
| 3. | a. | Find the mean and mode from the following data.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Weight(in gms) | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | | No. of articles | 14 | 17 | 22 | 26 | 23 | 18 | | CO3 | 10 |
| b. | Find the missing frequencies from the following distribution whose median value is 75.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Variable | 0 - 20 | 20 - 40 | 40 - 60 | 60 - 80 | 80 - 100 | Total | | Frequency | 10 | ? | 30 | ? | 75 | 170 | | CO3 | 10 |
| **(OR)** | | | | |
| 4. | a. | The following data were obtained while observing the life span of a few neon lights of a company. Calculate Standard deviation and Variance.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Life span (Years) | 4 - 6 | 6 - 8 | 8 - 10 | 10 - 12 | 12 - 14 | | No. of Neon Lights | 10 | 17 | 32 | 21 | 20 | | CO3 | 10 |
| b. | The following are scores of two batsmen A and B in a series of innings:   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | A | 12 | 115 | 6 | 73 | 7 | 19 | 119 | 36 | 84 | 29 | | B | 47 | 12 | 16 | 42 | 4 | 51 | 37 | 48 | 13 | 0 |   Who is the better score getter and who is more consistent? | CO3 | 10 |
|  |  |  |  |  |
| 5. | a. | Calculate trend value from the following data using method of least squares. Also estimate the production for 2018.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | | Production | 7 | 9 | 12 | 15 | 18 | 23 | | CO6 | 12 |
| b. | Compute a price index for 2016 taking 2015 as base for the following by  (i) Simple aggregate method.  (ii) Average of price relative method by using both arithmetic mean  and Geometric mean.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Commodity | A | B | C | D | E | F | | Price in 2015 | 20 | 30 | 10 | 25 | 40 | 50 | | Price in 2016 | 25 | 30 | 15 | 35 | 45 | 55 | | CO6 | 8 |
| **(OR)** | | | | |
| 6. | a. | Calculate three yearly moving average of the following data   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Year | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | | Production  (‘000) | 15 | 18 | 17 | 20 | 23 | 25 | 29 | 33 | 46 | 40 | | CO6 | 10 |
| b. | Compute the seasonal Index by the method of simple average for the following series.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Year | Quarterly Production | | | | | I | II | III | IV | | 2011 | 3.5 | 3.9 | 3.4 | 3.6 | | 2012 | 3.5 | 4.1 | 3.7 | 4.0 | | 2013 | 3.5 | 3.9 | 3.7 | 4.2 | | 2014 | 4.0 | 4.6 | 3.8 | 4.5 | | 2015 | 4.1 | 4.4 | 4.2 | 4.5 | | CO6 | 10 |
|  |  |  |  |  |
| 7. | a. | 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. | CO4 | 10 |
| b. | If and  find ‘a’ and ‘b’ such that AB = BA. Compute 3A+5B. | CO4 | 10 |
| **(OR)** | | | | |
| 8. | a. | If , and , find ‘a’ and ‘b’ when  2A+5B = C. | CO4 | 5 |
| b. | Evaluate the determinant (i)  (ii) | CO4 | 5 |
| c. | If , and .  Show that (i)  (ii)  and  (iii) . | CO4 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | If , and , show that  (i)  and (ii) . | CO5 | 5 |
| b. | Mr.Ramesh deposited Rs.25,000 on 01.01.2018. At the end of 5 months, he withdrew Rs.5000. Find the interest due to him on 31.12.2018 if the rate of interest is 12% per annum. | CO5 | 5 |
| c. | Calculate the compound interest and amount for Rs. 2500 for 4 years at 8% p.a., and the interest is compounded (i) annually (ii) half yearly and (iii) quaterly. | CO5 | 10 |