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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 02-01-2025 **Time:** 01:00 pm – 04:00 pm |

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| --- | --- | --- |
| **School:** SOL | **Program:** B.Com LL.B Hons | |
| **Course Code:** BCL2003 | **Course Name:** Business Statistics | |
| **Semester**: III | **Max Marks**:100 | **Weightage**:50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **10** | **20** | **20** | **20** | **30** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. 10 x 2 Marks=20 Marks** | | | | |
| **1** | The following table gives height of boys and girls in a college.   |  |  |  | | --- | --- | --- | |  | **Boys** | **Girls** | | Number  Average height  Variance | 400  68 inches  9 | 100  65 inches  4 |   Whose height is more variable? | **2 Marks** | **L4** | **CO1** |
| **2** | Explain the concept of probable error in correlation? | **2 Marks** | **L1** | **CO3** |
| **3** | What are the three types of Kurtosis? Draw the diagrams for each. | **2 Marks** | **L1** | **CO3** |
| **4** | List out any four properties of Normal Distribution. | **2 Marks** | **L1** | **CO3** |
| **5** | How Poisson distribution differs from Binomial Distribution? | **2 Marks** | **L2** | **CO3** |
| **6** | Draw diagrams of a perfect positive correlation and a perfect negative correlation. | **2 Marks** | **L1** | **CO3** |
| **7** | If Laspeyre's Price Index is 120 and Paasche's Price Index is 115, calculate Fisher's Price Index. | **2 Marks** | **L4** | **CO4** |
| **8** | Define the term 'moment' in statistics. | **2 Marks** | **L4** | **CO2** |
| **9** | What are Measures of Dispersion? Give two examples. | **2 Marks** | **L4** | **CO2** |
| **10** | Differentiate between Cyclical trend and seasonal variation. | **2 Marks** | **L1** | **CO3** |

**Part B**

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| --- | --- | --- | --- | --- | --- |
| **Answer the Questions Total 80 Marks** | | | | | |
| **11.** | **a.** | Calculate the first four moments about the mean from the following data. Also calculate the value of β1 and β2:   |  |  | | --- | --- | | **Marks** | **No. of students** | | 0-10 | 5 | | 10-20 | 12 | | 20-30 | 18 | | 30-40 | 40 | | 40-50 | 15 | | 50-60 | 7 | | 60-70 | 3 | | **10 Marks** | **L4** | **CO3** |
| **or** | | | | | |
| **12.** | **a.** | Calculate the mean deviation from the mean and means deviation from median for the following data**:**   |  |  | | --- | --- | | **Marks** | **No. of students** | | 0-10 | 6 | | 10-20 | 5 | | 20-30 | 8 | | 30-40 | 15 | | 40-50 | 7 | | 50-60 | 6 | | 60-70 | 3 | | **10**  **Marks** | **L4** | **CO3** |
|  |  |  |  |  |  |
| **13.** | **a.** | What do you understand by business statistics? Write its function & characteristics, also discuss its applicability in the area of Law. | **10 Marks** | **L1** | **CO1** |
| **or** | | | | | |
| **14.** | **a.** | **Calculate mode from the following data.**   |  |  | | --- | --- | | **Height in inches** | **No. of persons** | | **56** | **3** | | **58** | **7** | | **59** | **6** | | **60** | **9** | | **61** | **20** | | **62** | **22** | | **63** | **24** | | **64** | **5** | | **66** | **3** | | **68** | **1** | | **10 Marks** | **L4** | **CO2** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **15.** | **a.** | Find the trend of the following time series by the method of moving averages (assume a four yearly cycle). Draw trend line and actual data line on graph and give sales prediction for the year 2026.   |  |  | | --- | --- | | **Year** | **sales** | | 2010 | 53 | | 2011 | 79 | | 2012 | 76 | | 2013 | 66 | | 2014 | 69 | | 2015 | 94 | | 2016 | 105 | | 2017 | 88 | | 2018 | 80 | | 2019 | 104 | | 2020 | 98 | | 2021 | 96 | | 2022 | 102 | | 2023 | 106 | | **10 Marks** | **L4** | **CO3** |
| **Or** | | | | | |
| **16.** | **a.** | Fit a trend line by the method of semi-averages to the following data and give prediction for the year 2025.   |  |  | | --- | --- | | **Year** | **Production of Cars (in ‘000 units)** | | 2010 | 17 | | 2011 | 20 | | 2012 | 19 | | 2013 | 26 | | 2014 | 24 | | 2015 | 40 | | 2016 | 35 | | 2017 | 55 | | 2018 | 50 | | 2019 | 74 | | 2020 | 69 | | **10 Marks** | **L4** | **CO3** |

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| **17.** | **a.** | Calculate coefficient of correlation from the following data and comment on the result and with the help of probable error find out the significance of the result.   |  |  | | --- | --- | | **Experience (X)** | **Performance (Y)** | | 16 | 23 | | 12 | 22 | | 18 | 24 | | 4 | 17 | | 3 | 19 | | 10 | 20 | | 5 | 18 | | 12 | 21 | | **15 Marks** | **L4** | **CO3** |
| **Or** | | | | | |
| **18.** | **a.** | The following table gives the supply and price figures for a commodity for 6 days. Calculate correlation coefficient between price and supply.   |  |  |  |  | | --- | --- | --- | --- | | **Days** | **Price** | **Supply** | | | **Mon** | **22** | **10** | | | **Tue** | **30** | **12** | | | **Wed** | **25** | **15** | | | **Thu** | **20** | | **20** | | **Fri** | **15** | | **23** | | **Sat** | **8** | | **28** | | **15 Marks** | **L4** | **CO3** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **19.** | **a.** | Given the following data for 10 commodities, calculate the following price index numbers: Laspeyre's, Paasche's, Fisher's, Bowley's, Marshall-Edgeworth's, and Walsch's. Show all steps clearly.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Commodity** | **Base Year Price** | **Base Year Quantity** | **Current Year Price** | **Current Year Quantity** | | A | 15 | 10 | 20 | 12 | | B | 25 | 8 | 30 | 9 | | C | 35 | 6 | 40 | 7 | | D | 20 | 9 | 22 | 10 | | E | 10 | 15 | 12 | 16 | | F | 18 | 12 | 22 | 14 | | G | 30 | 7 | 32 | 8 | | H | 25 | 10 | 28 | 11 | | I | 40 | 5 | 45 | 6 | | J | 50 | 4 | 55 | 5 | | | **15 Marks** | **L4** | **CO3** |
| **Or** | | | | | |

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| **20.** | **a.** | Using the following data for X (independent variable) and Y (dependent variable), calculate the regression equation Y = a + Bx.   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **X** | **2** | **5** | **7** | **10** | **12** | **15** | **18** | **20** | **25** | **30** | | **y** | **5** | **9** | **11** | **15** | **18** | **22** | **25** | **28** | **34** | **40** | | **15 Marks** | **L4** | **CO3** |
|  | | | | | |

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| **21.** | **a.** | Calculate Mean, median, mode and Standard Deviation of the following data.   |  |  | | --- | --- | | **Class** | **frequency** | | 0-20 | 32 | | 20-40 | 16 | | 40-60 | 13 | | 60-80 | 10 | | 80-100 | 19 | | **5X4=20 Marks** | **L4** | **CO2** |
| **Or** | | | | | |
| **22.** | **a.** | Using this data, calculate the price index numbers using the following methods: Laspeyre's, Paasche's, Fisher's, Bowley's, Marshall-Edgeworth's, and Walsch's. Ensure all calculations are shown step-by-step.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Commodity** | **2022**  **Price** | **2022**  **Quantity** | **2023**  **Price** | **2023**  **Quantity** | | Rice | 18 | 12 | 24 | 14 | | Wheat | 22 | 15 | 28 | 16 | | Sugar | 30 | 10 | 36 | 12 | | Oil | 25 | 8 | 30 | 9 | | Salt | 12 | 20 | 15 | 22 | | Tea | 40 | 5 | 48 | 6 | | Coffee | 35 | 9 | 42 | 10 | | Milk | 28 | 11 | 34 | 13 | | Eggs | 50 | 7 | 60 | 8 | | Butter | 45 | 6 | 55 | 7 | | **20 Marks** | **L4** | **CO4** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***