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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 09 / 01/2025 **Time:** 01:00 pm – 04:00 pm |

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| **School:** SOC | **Program:** B.Sc Economics | |
| **Course Code :** BSE1021 | **Course Name :** Basic Econometrics | |
| **Semester**: III | **Max Marks**: 100 | **Weightage**: 50% |

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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** |
| **Marks** | **4** | **41** | **31** | **24** | **-** |

**Instructions:**

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

**Part A**

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| **Answer ALL the Questions. Each question carries 2 marks. (10Q x 2M = 20M)** | **Bloom's Level** | **CO** |

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| **1** | What does the acronym BLUE stand for? | **2 Marks** | **Remember** | **CO1** |
| **2** | Recall any difference between discrete and continuous variable with an appropriate example. | **2 Marks** | **Remember** | **CO1** |
| **3** | Show any contrast between cross-sectional and time series data. | **2 Marks** | **Remember** | **CO2** |
| **4** | What is the primary objective of the Ordinary Least Squares (OLS) method? | **2 Marks** | **Remember** | **CO2** |
| **5** | Define the Maximum Likelihood Estimation (MLE) method. | **2 Marks** | **Remember** | **CO2** |
| **6** | Outline the Gauss-Markov theorem. | **2 Marks** | **Understand** | **CO2** |
| **7** | Infer the meaning of "intercept" in a regression model. | **2 Marks** | **Understand** | **CO2** |
| **8** | What does R² measure in a regression model? | **2 Marks** | **Remember** | **CO2** |
| **9** | Name two tests used to detect heteroscedasticity. | **2 Marks** | **Remember** | **CO3** |
| **10** | Outline one alternative to the Chow test for testing structural breaks in regression models. | **2 Marks** | **Understand** | **CO4** |

**Part B**

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| **Answer ALL the Questions. Each question carries 7 marks. (5Q x 7M = 35M)** | | | **Bloom's Level** | **CO** |
| **11** | Interpret interval variable with an example. | **7 Marks** | **Understand** | **CO2** |
|  | **Or** | | | |
| **12** | Daily stock prices data belongs to one of the following types of data- time series, cross section or panel data. Explain your choice. | **7 Marks** | **Understand** | **CO2** |

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| **13** | Analyse the assumptions of Classical Linear Regression Model (CLRM). | **7 Marks** | **Analyse** | **CO2** |
|  | **Or** | | | |
| **14** | Y=β0​+β1​X+ϵ,  For the above equation, explain each component, and interpret the meaning of β0 and β1. | **7 Marks** | **Understand** | **CO2** |

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| **15** | Dissect the consequences of a violation of any two assumptions of the **Classical Linear Regression Model** (e.g., heteroskedasticity or multicollinearity). | **7 Marks** | **Analyse** | **CO3** |
|  | **Or** | | | |
| **16** | Below is the result output for a multiple linear regression model using **hours studied** and **prep exams taken**as predictor variables and **exam score**as a response variable.    Infer R Square, Adjusted R Square, intercept and the coefficients hours and prep\_exams. | **7 Marks** | **Analyse** | **CO3** |

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| **17** | Infer the Breusch–Godfrey (BG) Test statistics from the following: | **7 Marks** | **Analyse** | **CO3** |
|  | **Or** | | | |
| **18** | Examine three methods to detect multicollinearity in a regression model. Provide an example using the Variance Inflation Factor (VIF). | **7 Marks** | **Analyse** | **CO3** |

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| **19** | Examine the binary choice models and limited dependent variable model used in regression analysis using examples. | **7 Marks** | **Analyse** | **CO4** |
|  | **Or** | | | |
| **20** | Explain the use of dummy variables for interaction terms using an example. | **7 Marks** | **Analyse** | **CO4** |

**Part C**

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| **Answer Any THREE Questions. Each question carries 15 marks. (3Q x 15M = 45M)** | **Bloom's Level** | **CO** |

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| **21** | Apply the normal equations formula and find the linear regression equation of Y on X and X on Y for the following data:  X: 70 85 87 95 101 105 120  Y: 25 36 42 54 66 76 89 | **15 Marks** | **Apply** | **CO2** |
| **22** | Inspect the coefficients of the following multiple regression equation:  Y=5+0.8X1−0.5X2+ϵ  where Y represents income, X1 represents years of education, and X2​ represents age. | **15 Marks** | **Analyse** | **CO2** |
| **23** | Identify the different cases of multiple regression model specification and the detection of each type. | **15 Marks** | **Apply** | **CO3** |
| **24** | Examine the different types of binary choice models and limited dependent variable model and their types with examples. | **15 Marks** | **Analyse** | **CO4** |