Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF COMMERCE
END TERM EXAMINATION - JAN 2023

Semester : Semester III - 2021
Course Code : BSE1009
Course Name : Sem III - BSE1009 - Basic Econometrics
Program : B.Sc. Economics

Date : 9-JAN-2023
Time : 1.00PM - 4.00PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.

PART A

ANSWER ALL THE FOLLOWING QUESTIONS **10 X 2 = 20M**

1. Variance Inflation Factor is used for…

(CO1) [Knowledge]

2. A time series sample data is considered stationary if the following characteristics of the series are time invariant: Suggest applicable reason.
a. Mean
b. Variance
c. Covariance
d. All of the above

(CO1) [Knowledge]

3. The statistical properties of OLS estimators are characterized by

(CO2) [Knowledge]

4. Consider two regression models (1 and 2) with R2 of 0.52 and 0.89 respectively. Which among the following statements is true? and Why?

(CO2) [Knowledge]

5. What are the assumptions under CLRM.

(CO1) [Knowledge]

6. Which of the following statements is NOT TRUE about a regression model in the presence of multicollinearity. Give specific reason.
a. t ratio of coefficients tends to be significantly
b. R2 is high
c. OLS estimators are not BLUE
d. OLS estimators are sensitive to small changes in the dat

(CO2) [Comprehension]

7. If the residuals from a regression estimated using a small sample of data are not normally distributed, which one of the following consequences may arise? And Why?a)The coefficient estimate will be unbiased inconsistent
b) The coefficient estimate will be biased consistent
c) The coefficient estimate will be biased inconsistent
d) Test statistics concerning the parameter will not follow their assumed distributions

(CO1) [Comprehension]

8. Why does a Time Series have to be Stationary?

(CO2) [Comprehension]

9. What are dummy variables and where is it used?

(CO2) [Comprehension]

10. What is the meaning of the term "heteroscedasticity"?

(CO2) [Comprehension]

PART B

ANSWER ALL THE FOLLOWING QUESTIONS **4 X 10 = 40M**

11. Write the meaning of each of the following terms

1. Time series data, Panel data
2. Residuals , Stochastic error term
3. Regression analysis, Estimated regression Equation

(CO3) [Comprehension]

12. What will be the properties of the OLS estimator in the presence of multicollinearity?

(CO3) [Comprehension]

13. What is Linear Regression? Explain the Classical Linear Regression Assumptions. Describe the classical assumption of the regression model.

(CO4) [Comprehension]

14. What do you understand by autocollreation? For a two variable model $Yt = \beta 0 + \beta 1\ X1t + ut$. Show that in the presence of autocorrelation the ordinary east square estimator are still liner unbiased but they are no longer efficient. Also discuss in detail the Durbin Watson Test and its importance.

(CO4) [Comprehension]

PART C

ANSWER ALL THE FOLLOWING QUESTIONS **2 X 20 = 40M**

15. A teacher is interested in the relationship between hours spent studying and total points earned in a course. Data collected on 10 students who took the course last quarter follow.

Hours (Spent Studying)	Total (Points Earned)
55	30
40	40
80	50
70	60
95	80
55	60
90	80
80	80
65	55
75	65

1. Develop an estimated regression equation showing how total points earned are related to hours spend studying.
2. Compute SST, SSR, and SSE.
3. Compute the coefficient of determination r2. Comment on the goodness of fit.
4. Test for a significant relationship by using the t test. Use α = .05.
5. Use the F test to test for a significant relationship. Use α = .05. What is your conclusion?

(CO5) [Comprehension]

16. What is Multicollinearity? For the model $Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + u_t$; t=1,2,….,n discuss in details the consequences of multicollinearity on least square estimation. Also describe a test for detecting multicollinearity.

(CO6) [Application]

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