PARUL UNIVERSITY
FACULTY OF ARTS
B. ARTS Summer 2022-23 Examination

Semester: - 6   Date: 14/03/2023
Subject Code: - 15101354   Time: 02:00pm to 04:30pm
Subject Name: - Basic Econometric Methods   Total Marks: 60

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Start new question on new page.

Q.1   Do As Directed.   08

1   Economic theories make statements or hypothesis that are mostly _____ in nature
    (A)   Qualitative   (B)   Quantitative
    (C)   Descriptive   (D)   None of the above

2   Which of the following is not a type of econometrics?
    i. Theoretical econometrics
    ii. Applied econometrics
    iii. Qualitative econometrics
    iv. Quantitative econometrics
    (A)   ii & iii   (B)   iii & iv
    (C)   ii, iii & iv   (D)   Only iv

3   Which of the following is not true with respect to econometric model?
    i. $Y = a + bX$
    ii. $Y = a + bX + e$
    iii. $\hat{Y} = a + bX$
    iv. $e = Y - \hat{Y}$
    v. $e = \hat{Y} - Y$
    (A)   i and v   (B)   i and iv
    (C)   Only v   (D)   iii and v

4   Which of the following is not the reason for the error in the regression model?
    (A)   Use of inappropriate software   (B)   Vagueness of Theory.
    (C)   Principle of Parsimony.   (D)   Unavailability of Data.

5   If there is no error in the fitted model, it means…
    i. It is a mathematical model
    ii. it is a deterministic model
    iii. Estimated Y equals to Actual Y
    (A)   Only ii   (B)   i and ii
    (C)   i, ii and iii   (D)   Only iii

6   Which of the following is the measure for the goodness of fit.
    (A)   R-Squared   (B)   F Test
    (C)   T Ratio   (D)   DWD Test

7   Which of the following is the correct representation?
    (A) $ESS = R^2 * TSS$ (B) $RSS = TSS – ESS$
    (C) $TSS = R^2 * ESS$ (D) $RSS = TSS (1-(ESS/TSS))$

8   Which of the following test is used to test the significance of the estimated coefficient?
    (A)   Student's T test   (B)   DWD Test
    (C)   F Test   (D) R^2

9   The F-Test indicates…………..
    (A)   The significance of the fitted model.   (B)   The significance of the estimated coefficient.
    (C)   Goodness of Fit   (D)   Presence of autocorrelation.

10   The value of DWD test lies between……….
    (A) $0 \leq DWD \leq 4$ (B) $0 \leq DWD \leq 2$
    (C) $1 \leq DWD \leq 4$ (D) $2 \leq DWD \leq 4$

11   Which of the following represents the equal variance of the error *e*?
    (A)   Heteroscedasticity   (B)   Homoscedasticity
    (C)   Autocorrelation   (D)   Error variance

12   Which of the following is the method to detect the presence of multicollinearity?
    I. VIF
    II. Cross correlation matrix
    III. DWD Test
    (A)   I and II   (B)   Only I
    (C)   Only II   (D)   None

13 _____ test is used for the testing of unit root in the series.

(A) ADF   **(B)** T

(C) DWD   **(D)** F

14 Which of the following is not the reason for the presence of autocorrelation in the model?

(A) Problem with the theory   **(B)** Specification bias

(C) Inertia   **(D)** Non stationary daya

15 The DWD = 2 indicates_____.

(A) Perfect autocorrelation   **(B)** No autocorrelation

(C) Positive autocorrelation   **(D)** Negative autocorrelation

16 "National income of Asian countries from 1950 to 2022", is an example of_____.

(A) Panel data   **(B)** Time series data

(C) Multiple data   **(D)** Cross section data

B. **Explain the following terms. (Each of 01 mark)**   **(07)**

1 Stochastic model

2 Stationary data

3 Sample regression function

4 Specification bias

5 Hypothesis

6 Panel data

7 Autoregressive model

Q.2 **Answer the following.**

1 What is meant by Econometrics? Discuss the need of econometrics as a separate subject?   **(04)**

2 Discuss any four sources of error in the regression model.   **(04)**

3 Explain the numerical properties regression line.   **(04)**

OR

3 What are the assumptions of OLS method?   **(04)**

Q.3 **Answer the following.**

1 What is meant by autocorrelation? Discuss the sources of autocorrelation in the model.   **(05)**

2 Write a note on Student's T test.   **(05)**

3 Write a note on goodness of fit.   **(05)**

OR

3 What is meant by multicollinearity? Discuss any four remedial measures for the problem of multicollinearity in the model.   **(05)**

Q.4 **Answer the following.**

1 Explain the process of econometric analysis in brief.   **(06)**

2 The information on sales and advertisement expenditure of Asus Laptop is as under;   **(06)**

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sales (Thousand Units)	80	100	120	140	160	180	200	220	240	260
Adv. Exp.(Thousand Rs)	70	65	90	95	110	115	120	140	155	150

(i) Analyze the effect of advertisement on sales and the expected sign of the coefficients.

(ii) Comment on the results.

(iii) If the planned Advertisement Expenditure of the firm for the year 2021 and 2022 is 180 and 230 respectively, forecast the sales of laptop for these years.

3 Estimated demand of the Kingston Pen Drive is as under; **(06)**

$$Log(DD) = 12.342 - 2.65 Log(Pk) + 7.075 Log(Ad) + 0.02 Log(Ps)$$
$$(6.45) \qquad (0.32) \qquad\qquad (7.89) \qquad\qquad (0.6)$$
$$\textbf{TSS = 6432} \quad \textbf{RSS = 4245.12}$$

Where; DD = Demand of Kingston Pen Drive, Pk = Price of Kingston Pen Drive , Ad = Advertisement Expenditure , Ps = Price of Sony Pen Drive, Number of Observations = 34

Figures in the brackets represent the standard error of the respective coefficient. Answer the following:

(i) Interpret the demand function by taking into account your prior expectation about the sign of the coefficients.

(ii) Test the significance of the individual coefficients at 5% level of significance (T Table Value at 5% is 2.042).

(iii) Calculate and comment on Goodness of Fit.

OR

3 Write a note on the significance of panel data analysis. **(06)**