2023

ECONOMICS — HONOURS — PRACTICAL

Paper : DSE-A-1P

(Applied Econometrics)

Full Marks : 30

The figures in the margin indicate full marks.

Answer ***any three*** questions.

1. Dataset Question 1 represents sex (1 for male and 2 for female), age and wage of 3,200 workers. Use dataset question 1 to

(a) Calculate mean, median, standard deviation, skewness and kurtosis of age and wage.

(b) Draw a histogram for wage by plotting percentage of wage on the vertical axis.

(c) Draw a scatter plot between wage and age.

(d) Make a list of workers whose wages are more than 10,000.

(e) Count the numbers of persons whose age is above 45.

(f) Get the non-statistical description of the dataset. 2+2+2+1+1+2

2. Dataset Question 2 represents annual data of gross domestic product (gdp) of a country for the period (year) 1950 to 2012. Use this dataset and answer the following.

(a) Get a line plot of gdp.

(b) Create a one period lagged values of gdp.

(c) Fit a linear time trend over the period.

(d) Fit a quadratic time trend over the period.

(e) Compare the linear and quadratic time trend. 2+2+2+2+2

3. Dataset Question 3 represents expenditure on food (y1), expenditure on non-food (y2) and age (x) of 2,700 respondents. Use dataset Question 3 to answer the following :

(a) Estimate the linear regression model of y1 on age (x).

(b) Is the coefficient of age significant?

(c) Explain the ANOVA table.

(d) Get the 95% confidence interval for expenditure on food.

(e) Compute the R^2 (R-squared) from the displayed values of sum of squares. Compare this value with the displayed value of R-squared. 2+2+2+2+2

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4. Dataset Question 4 represents Female population of age 6 years and above who ever attended school (%) (y), Women (age 15-49) who are literate (%) (x1), Women (age 15-49) with 10 or more years of schooling (%) (x2) and Women age 20-24 years married before age 18 years (%) (x3) of 707 respondents. Use dataset Question 4 to answer the following :

   (a) Estimate the linear regression model of y on x1 and x2.

   (b) Are the coefficients statistically significant?

   (c) Get the predicted values of y and name it 'y-hat.'

   (d) Get the residuals of estimated regression and name the series as 'res'.

   (e) Get the difference between y and y-hat and name the series as 'r1'.

   (f) List 'r1' and 'res' for last 120 respondents to see if they are equal. 1+1+2+2+2+2

5. Dataset Question 5 represents contribution of service sector (services) and banking and insurance (bank) in state gdp of 23 states for 19 years. Use this dataset

   (a) To estimate how 'services' is affected by 'bank' applying random effect error component model and interpret your results.

   (b) Estimate the same model by considering fixed effect model and interpret your results.

   (c) Compare the results of fixed effect and random effect model. 4+3+3
