UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Fifth Semester – Spring 2022

Roll No. .....

Paper: Econometrics – I **Course Code: ECON-305-A** **Time: 3 Hrs. Marks: 60**

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions: (6x5=30)

1. Discuss time series, cross sectional and panel data with examples.
2. What do you mean by coefficient of determination? What are its properties?
3. Discuss statistical properties of OLS estimators.
4. Discuss consequences of auto-correlation for OLS estimators.
5. Differentiate between OLS and GLS (Generalized Least Square) estimators.
6. Why do we need regression analysis? Why not simply use the mean value of the regressand as its best value?

Answer the following questions. (3x10=30)

Question 2

(a) Consider the following OLS regression model:

$$\ln y_t = \alpha + \beta \ln x_t + \varepsilon_t$$

Where y_t →Real food expenditure, x_t → Real food advertising expenditure, ln →log values are used to compress the scale. The model was estimated using quarterly data 1983-1992 and following results were obtained.

$$\ln y_t = 8.236 + 0.0175 \ln x_t$$

$R^2 = 0.36$

i. Interpret estimated regression coefficients.
ii. Comment on nature of regression.
iii. Comment on value of R^2. State reasons pertaining to low value of R-square.

(b) Income and Consumption expenditure (x and y respectively) are given for 20 families. Given the data,

i. Estimate consumption function.
ii. Indicate value of MPC (marginal propensity to consume).
iii. Indicate consumption level at zero income and give economic interpretations of your regression results.

$$\sum x = 191{,}200 \qquad \sum y = 175{,}300 \qquad \sum x^2 = 2{,}165{,}180{,}000 \qquad \sum y^2 = 1{,}813{,}469{,}000$$
$$\sum xy = 1{,}973{,}670{,}000$$

Question 3. Define hetro-skedasticity and discuss its consequences, detection methods and remedial measures.

Question 4.

From the following data find regression coefficients and test individual statistical significance of the coefficients.

Year	2000	2001	2002	2003	2004	2005	2006	2007
Qd (Y)	100	75	80	70	50	65	90	100
Price (X1)	15	17	16	16	18	17	15	14
Income (X2)	1000	600	1200	500	300	400	1300	1100