UNIVERSITY OF THE PUNJAB

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

Roll No. .....

Paper: Econometrics II **Course Code: ECON-307** **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. If you have monthly data over a number of years, how many dummy variables will you introduce to test the following hypotheses:
   a) All the 12 months of the year exhibit seasonal patterns.
   b) Only February, April, June, August, October, and December exhibit seasonal patterns.
2. Discuss properties of ML (Maximum Likelihood) estimators.
3. Discuss usage of ARCH (Auto-regressive Conditional Hetro-skedasticity) model.
4. Discuss usage of Durbin Watson Statistic.
5. Define instrumental variable and its properties.
6. What do you mean by specification bias and errors in variables?

Q.2. Answer the following questions. (3x10=30)

i.

The estimated long run function is reported below.

$$PCY_t = 59.25 + 0.24\ Openness_t - 14.85\ Gini_t + 0.97\ Edu_t + 28.15\ Health_t$$

St. Errors (0.145) (1.66) (0.103) (2.84)

n=34 $R^2 = 0.60$ D.W = 1.96 F-stat (p-value) = 0.07

Where, PCY – per capita income used for economic growth, Openness – trade volume as % of GDP, Gini – used for income inequality, Edu – Education expenditures in millions , Health – Life expectancy (in years) used as proxy for health indicator. All variables are taken in log form. The standard errors are given in parenthesis.

a) Discuss individual statistical significance of the variables.
b) Interpret Gini and Openness estimated coefficient.
c) Comment on Overall significance of the model.
d) What is usage of Durbin Watson stat?
e) Is it necessary that all variables must be integrated of order one to have a long run relationship?

ii.

"A test of co-integration can be thought as a pre-test to avoid spurious regression situation". Discuss with your valuable comments.

iii.

a) What do you mean by hetro-skedasticity and auto-correlation problem?
b) Discuss relevance of GLS (Generalized least square) method with respect to hetro-skedasticity and auto-correlation issue.