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Register Number:

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**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

**MA ECONOMICS – III SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2021**

(Examination conducted in March 2022)

**EC 9418: Basic Econometrics**

**Time- 2 ½ hrs Max Marks-70**

**This paper contains TWO printed pages and THREE parts**

**PART A Answer any FIVE of the following 2 X5=10**

1. Differentiate between time-series and cross-sectional data.
2. What is the Gauss-Markov theorem?
3. What is the difference between an estimator and an estimate? Explain in the context of simple regression model given underlying population regression line .
4. The for a regression model is 0.77. What is measuring and what does the number imply?
5. In a regression model with 2 explanatory variables (X and Z), how is the interpretation of the coefficient on X different from a model with only X as the explanatory variable?
6. What is Variance Inflation Factor (VIF)?
7. What is dummy variable trap?

**PART B Answer any THREE of the following 10x 3=10**

1. What is a joint or compound test? What is the basic idea (in term of fit or RSS) behind using F-test to conduct a joint test? Consider a simple regression model with 3 explanatory variables to explain.
2. A researcher considers that hourly earnings (Wages), may be related to hours of training, (Training), according to the relationship:

She wants to test the null hypothesis against the alternative hypothesis at *both* 5 percent and 1 percent levels.

What would be the decision if = 0:30, = 0.12?

The critical values of t-stat for 48 degrees of freedom at the 5 percent, 1 percent levels are 2.01 and 2.68.

* 1. What is autocorrelation?
  2. A popular test for auto-correlation is the Durbin Watson (DW) test. The DW statistic is given by where is the residual. What is intuition behind why d=2 implies no auto-correlation?

1. What is heteroscedasticity? Discuss one test to detect heterscedasticity.
2. What does it mean if an estimator is unbiased? In a simple linear equation with one explanatory variable: show that the OLS estimator

is unbiased?

**PART C Answer any TWO of the following 15 X2=30**

1. A researcher is interested in understanding how wage is affected by being part of union. In addition, she is interested in finding if being a union member affects wage differently for male and female.
   1. Write a model which includes a dummy variable to capture the impact of being a union member.
   2. Can an interaction model be used to capture how union membership impacts male and female differently.
   3. What is the Chow test used for?
   4. Given 2 samples, How do we run the Chow test? (It is a variant of F test below)

F =

1. What are the consequences of autocorrelation? Suggest a potential remedy to solve AR(1) autocorrelation problem.