THIRD SEMESTER M.A. DEGREE EXAMINATION, NOVEMBER 2022
(**Regular/Improvement/Supplementary**)

ECONOMICS
FECO3C11 - BASIC ECONOMETRICS

Time: 3 Hours   **Maximum Weightage: 30**

Part A: Multiple choice questions. Answer *all* questions. Each carries $\frac{1}{5}$ weightage.

1. The meaning of linearity in regression theory is that it is:

   a) Linear in variables   b) Linear in parameters
   c) Linear in variables, non-linear in parameters   d) Linear in variables and parameters

2. Which of the following is used to detect specification errors?

   a) RESET test   b) The Runs test   c) Chow test   d) The Park test

3. The identical conditional variance of the random term given the explanatory variable is called:

   a) Serial correlation   b) Homoscedasticity
   c) Heteroscedasticity   d) Multicollinearity.

4. The Runs test used to detect autocorrelation is:

   a) Parametric test   b) Non-parametric test
   c) Equivalent test   d) Hypothesis test

5. In the log log model, $\log Y_i = \beta_1 + \beta_2 \log X_i + U_i$, slope is:

   a) $\beta_2(X/Y)$ b) $\beta_2(Y/X)$ c) $\beta_2(Y)$ d) $\beta_2(1/X)$

6. Which of the following is not a formal method of detecting heteroscedasticity?

   a) Park test   b) Glejser test
   c) Spearman's rank correlation test   d) Durbin's m test

7. When a linear function is fitted to non-linear data set it will result in:

   a) Measurement error   b) Sampling error
   c) Specification error   d) None of the above

8. The probability of not committing a type II error is known as:

a) Confidence interval   b) Level of significance
c) Power of the test   d) None of the above

9. Dummy variables are proxies used to represent:

a) Ratio scale variables   b) Nominal variables
c) Interval scale variables   d) None of the above

10. Standard error of an estimator shows the:

a) Precision of the estimator   b) Variability of the data
c) Goodness of fit of the regression line   d) None of the above

11. Multicollinearity destroys:

a) Minimum variance property of OLS estimators   b) Unbiasedness of OLS estimators
c) Efficiency of OLS estimators   d) None of the above

12. When a variable is added to the set of independent variables of a multiple regression model, the value of R^2 will:

a) Decrease   b) Increase
c) Not change   d) Become double

13. If the Durbin Watson test statistic takes a value of 1.8. What is the appropriate conclusion?

a) Residuals appear to be negatively autocorrelated
b) Residuals appear not to be autocorrelated
c) Residuals appear to be positively autocorrelated
d) The test result is inconclusive

14. Which of the following theorems is used to justify the normality assumption of random variable in regression model?

a) Euler's theorem   b) Chebyshev's theorem
c) Gauss-Markov theorem   d) Central limit theorem

15. If an explanatory variable is correlated with stochastic error term OLS estimators become:

a) Inefficient   b) Biased
c) Biased and Inconsistent   d) All of the above

($15 \times {}^1/_5 = 3$ weightage)

Part B: Very short answer questions. Answer any *five* questions. Each carries *one* weightage.

16. State and explain the algebraic properties of OLS statistics.

17. Explain the law of large numbers.

18. Elaborate on the concept of omitted variable bias.

19. Distinguish between homoscedasticity and heteroscedasticity.

20. Define a probit model.

21. Distinguish between ANOVA and ANCOVA models.

22. What is the general form of 't' statistic?

23. Explain the concept of confidence interval for population mean.

(5 × 1 = 5 weightage)

Part C: Short answer questions. Answer any *seven* questions. Each carries *two* weightage.

24. Explain the types of specification errors.

25. Explain various types of data structures used in applied econometric work.

26. Distinguish between R^2 and Adjusted R^2.

27. Examine the use of dummy variables in seasonal analysis.

28. What is the role of disturbance term in an econometric model? Explain.

29. Distinguish between statistical significance and practical significance.

30. Discuss the methods of detecting heteroscedasticity.

31. Explain the testing of equality of two regression coefficients.

32. Distinguish lin-log model from log-lin model.

33. Define multicollinearity? How is multicollinearity detected?

(7 × 2 = 14 weightage)

Part D: Essay questions. Answer any *two* questions. Each carries *four* weightage.

34. State and prove Gauss Markov theorem.

35. Explain the procedure of testing the overall significance of the regression model. Discuss the various steps involved in hypothesis testing.

36. How will you estimate a dummy variable model? What are the interpretations of the estimates?

37. What is autocorrelation? Discuss its consequences and remedies.

(2 × 4 = 8 weightage)