

**THIRD SEMESTER M.A. DEGREE EXAMINATION, NOVEMBER 2021**  
**(Regular/Improvement/Supplementary)**

**ECONOMICS**  
**FECO3C11- BASIC ECONOMETRICS**

**Time: Three Hours**

**Maximum Weightage: 30**

**Part A: Multiple Choice Questions. All questions can be answered. Each carries  $\frac{1}{5}$  weightage.**

1. OLS Model assumes that the sum squares of residuals are .....  
(a) Maximum                      (b) Minimum                      (c) Infinite                      (d) Zero
2. Test of significance of the parameter in regression model is based on .....  
(a) Z                      (b)  $\chi^2$                       (c) t                      (d) F
3. A hypothesis such as  $H_0 = \beta_2 = \beta_3 = 0$  is tested with .....  
(a) t test                      (b) F test                      (c) Chi-square test                      (d) None of these
4. In multiple regression, the adjusted R square .....  
(a) cannot be negative                      (b) never be greater than  $R^2$   
(c) equal the square of r                      (d) cannot decrease as an additional predictor variable is added
5. When  $R^2$  is zero, F value will be .....  
(a) Infinity                      (b) High positive                      (c) Low positive                      (d) Zero
6. If a qualitative variable has m categories, we can introduce only .....  
(a) m dummy variables                      (b) m-1 dummy variables  
(c) m+1 dummy variables                      (d) m+2 dummy variables
7. In Log-Lin regression model, the slope coefficient gives:  
(a) The relative change in Y for an absolute change in X  
(b) The percentage change in Y for a given percentage change in X  
(c) The absolute change in Y for a percent change in X  
(d) By how many units Y changes for a unit change in X
8. When comparing  $R^2$  of two regression models, the models should have the same .....  
(a) X variables                      (b) Y variables                      (c) Error term                      (d) Beta coefficients
9. Park's test (Rolla Edward Park) is a .....  
(a) One stage procedure                      (b) Two stage procedure  
(c) Three stage procedure                      (d) Four stage procedure
10. The regression coefficient estimated in the presence of autocorrelation in the sample data are NOT .....  
(a) Unbiased estimators                      (b) Consistent estimators  
(c) Efficient estimators                      (d) Linear estimators

**(P.T.O.)**

11. By autocorrelation we mean:
- Residuals of a regression model are not independent
  - Residuals of a regression model are related with one or more of the regressors
  - Squared residuals of a regression model are not equally spread
  - Variance of the residuals of a regression model is not constant for all observations
12. Using OLS estimation technique in the presence of heteroscedasticity will lead to:
- Easy acceptance of statistically significant coefficient using t and F test
  - Easy rejection of statistically significant coefficient using t and F test
  - The t and F test still being accurate
  - The t test gives accurate results while F test does not
13. Coefficient of over fitted model would have .....
- Biased coefficient
  - Inconsistent coefficient
  - Inefficient coefficient
  - All of the above
14. The assumption of Multicollinearity means that:
- No correlation among the regressors
  - There should be no linear relationship among the regressors
  - There should be no nonlinear relationship among the regressors
  - There should be no relationship among the regressors
15. The method used to correct for autocorrelation when the  $\rho$  (coefficient of  $U_{t-1}$ ) is not known is
- The first-difference method
  - Cochran-Orcutt iterative method
  - Durbin two-step procedure
  - All of the above

(15×1/5= 3 weightage)

**Part B: Very short answer questions. All questions can be answered. Each carries one weightage (Ceiling 4 weightage).**

- Define population regression function.
- Compare and contrast the mathematical model and the econometric model.
- Explain the degrees of freedom for total variation, explained variation and unexplained variation.
- Represent the general k variable model in matrix form.
- Furnish the model involved in Park test.
- Define the problem of dummy variable trap.
- Explain the method of testing parameter stability in regression models.
- Bring out the relevance of normality assumption with respect to the distribution of error term.

**Part C: Short answer questions. All questions can be answered. Each carries three weightage (Ceiling 15 weightage).**

24. Interpret the following regression result on the basis of each value.
- |                                  |   |                               |
|----------------------------------|---|-------------------------------|
| Estimated Consumption            | = | 50.12 + 0.64 (Current Income) |
| SE of Slope Coefficient          | = | 0.070                         |
| $r^2$                            | = | 0.86                          |
| t-value of Intercept and p-value | = | 1.1 and 0.77                  |

t-value of Slope and p-value = 10.34 and 0.000

F-statistic and p-value = 108.30 and 0.000

25. How could the total variation in the dependent variable be decomposed in a linear regression model with the help of a suitable diagram?
26. Discuss the remedial measures to overcome the problem of heteroscedasticity.
27. Critically evaluate the importance of Adjusted R Square in multiple regression.
28. Discuss the problems of linear probability model.
29. Critically discuss the assumptions of classical linear regression model.
30. Derive the variance covariance matrix of explanatory variables in the context of multiple regression.
31. Appraise the regression model appropriate for measuring the growth rate.
32. Examine the method of restricted least squares in testing linear equality restrictions.
33. Explain the method of testing parameter stability in regression models.

**Part D: Essay questions. All questions can be answered. Each carries *four* weightage (Ceiling 8 weightage).**

34. In a regression analysis the following information have been derived out of the sample survey. On the basis of that, find whether the individual parameters and the underlying regression model as a whole are applicable to the population. Comment also on the goodness of the fit.

Arithmetic Mean of X (Explanatory Variable) = 1700.0

Arithmetic Mean of Y (Regressand) = 1144.1

Coefficient of X (Explanatory Variable) = 0.479

Total Variation = 94,5972.9

Unexplained Variation = 188817.6

Sample Size = 10

Standard Error of Regressand = 151.756

Standard Error of Explanatory Variable = 0.0846

35. Prove the Gauss Markov Theorem in matrix notation.
36. Critically discuss the logistic regression model among the class of qualitative response regression models.
37. Evaluate the problem of Multicollinearity and discuss the various remedial measures.