

END SEMESTER EXAMINATION

Financial Econometrics: MTF50101

Total Marks: 100

Duration: 3 hrs

1. Choose the appropriate answer:

[1X10=10]

- i. In the regression function $y = \alpha + \beta x + c$ [CO1]
- a) x is the regressor
 - b) y is the regressor
 - c) x is the regressand
 - d) None of these
- ii. Locus of the conditional mean of the dependent variable for the fixed values of the explanatory variable is called [CO1]
- a) Indifference curve
 - b) Population regression curve
 - c) Production Possibility curve
 - d) None of these
- iii. The coefficient of determination shows [CO2]
- a) Proportion of the variation in the dependent variable Y is explained by the independent variable X
 - b) Proportion of the variation in the dependent variable X is explained by the independent variable Y
 - c) Proportion of the variation in the dependent variable u is explained by the independent variable X
 - d) Both 1 and 3
- iv. BLUE is [CO2]
- a) Best Linear Unbiased Estimator
 - b) Best Linear Unconditional Estimator
 - c) Basic Linear Unconditional Estimator
 - d) Both 2 and 3
- v. Assumptions under CLRM [CO3]
- a) Linear in parameters
 - b) Non-linear in parameters
 - c) X values dependent on error term
 - d) Positive mean value of disturbance term

- vi. In regression analysis, if the independent variable is measured in kilograms, the dependent variable [CO3]
- must also be in kilograms
 - must be in some unit of weight
 - cannot be in kilograms
 - can be any units
- vii. If the correlation coefficient is 0.8, the percentage of variation in the response variable explained by the variation in the explanatory variable is ___ [CO3]
- 0.80%
 - 80%
 - 0.64%
 - 64%
- viii. What would be then consequences for the OLS estimator if heteroscedasticity is present in a regression model but ignored? [CO4]
- It will be ignored
 - It will be inconsistent
 - It will be inefficient
 - All the above
- ix. In a regression model with multi collinearity being very high, the estimators [CO4]
- Are unbiased
 - Are consistent
 - Standard errors are correctly estimated
 - All of the above
- x. Which one of the following is NOT an example of mis- specification of functional form? [CO5]
- Using a linear specification when y scales as a function of the squares of x
 - Using a linear specification when a double-logarithmic model would be more appropriate
 - Modelling y as a function of x when in fact it scales as a function of $1/x$
 - Excluding a relevant variable from a linear regression model

2. Answer any five of the following questions: [3X5=15]
- Differentiate between point estimation and interval estimation. [M1][CO1]
 - What is the difference between the population and sample regression functions? [CO1]

- iii. Differentiate between time-series data and cross-sectional data with the help of examples. [CO3]
- iv. Is multi collinearity really a problem? What are the practical consequences? [CO4]
- v. What are the criteria in choosing a model for empirical analysis? [CO5]
- vi. What are specification errors in econometric model? [CO5]

3. Answer any five of the following questions: [7X5=35]

- i. How does the size of population determine the value of a sampling distribution? Explain with the help of an example. [CO1]
- ii. Explain the significance of stochastic disturbance term. [CO2]
- iii. State and explain the properties of sample regression line. [CO3]
- iv. State and explain the assumptions underlying the CLRM. [CO3]
- v. How is exponential smoothing method an improvement over weighted moving average? Explain with the help of an example. [CO4]
- vi. How does one detect specification errors? [CO5]

4. Answer any four of the following questions: [10X4=40]

- i. Explain the procedure of computing a t-test for a sample mean on the sampling distribution of means. [CO2]
- ii. Consider the following formulations of the two-variable PRF:
 Model I: $Y_i = \beta_1 + \beta_2 X_i + u_i$
 Model II: $Y_i = \alpha_1 + \alpha_2 (X_i - \bar{X})$
 Find the estimators of β_1 and α_1 . Are they identical? Are their variances identical? [CO3]
- iii. Explain with reasons whether the following statements are true, false or uncertain [CO3]
 - a) Since the correlation between two variables X and Y can range from -1 to +1, this also means that the cov (X,Y) also lies between these limits.
 - b) If the correlation between two variables is zero, it means that there is no relationship between the two variables whatsoever.
 - c) If you regress Y_i on \hat{Y}_i , the intercept and slope values will be 0 and 1 respectively.
 - d) The following table shows the ages (X) and blood pressure (Y) of 8 persons.
- iv. Obtain the regression equation of Y on X and find the expected blood pressure of a person who is 49 years old. Plot the residuals. Obtain the coefficients. Test the results at 99% confidence interval. Use t critical value of 3.25 at df = 9. [CO3]

X	52	63	45	36	72	65	47	25
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Y	62	53	51	25	79	43	60	33
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- v. Star Wars Co. Ltd., uses simple exponential smoothing with smoothing constant $\alpha = 0.2$ to forecast the demand. The forecast for the first week of March was 400 units and the actual demand turned out to be 450 units. Estimate the demand for the second week of March. If the actual demand for the second week of March is 460 units, forecast the demand up to April second week. Assume that the demands for subsequent weeks are 465, 434, 420, 498, 462 and 470 units. [CO4]