RPN – 13

M.Com. (Semester – III) (Acct. & Fin.) Examination, November 2016
COO3A1 : ECONOMETRICS FOR FINANCE (OA – 18)

Duration : 3 Hours Max. Marks : 60

***Instructions** : 1) This paper consists of **nine** questions carrying **equal** marks.*
*2) Question No. **1** consists of **5 compulsory** questions of **2** marks **each**.*
*3) Answer **any 5** questions from Question **2, 3, 4, 5, 6, 7, 8, and 9**.*
*4) **Each** question carries **10** marks. Figures to the **right** indicate **marks**.*

1. Answer the following short questions in brief : **(5×2=10)**
   a) What do you understand by Econometrics ?
   b) Mention any four types of Model Specification Errors.
   c) Define Auto correlation.
   d) What is Volatility Clustering ?
   e) What is meant by Dummy variable ?

2. 'The classical linear regression model is based on a set of assumptions'. Explain. **10**

3. a) In a study of dependence of expenditure on Research and Development (Y_i) on sales (X_{1i}) and profit after tax (X_{2i}) sampling across 16 industries, the residuals from the regression were obtained and modeled for White's Heteroscedasticity test. The following results were obtained :
   $\widehat{u_i^2} = -6.8144 + 2.29\ \text{sales}_i + 0.98\ \text{profit}_i - 0.50\ (\text{sales}_i)^2 - 0.50\ (\text{profit}_i)^2 + 0.0015\ (\text{sales}_i)\ (\text{profit}_i)$.
   $R^2 = 0.013$ $n.R^2 = 0.208$ Chi-square (0.05,5) = 11.0705.
   Identify the nature of problem in the model and interpret the result. **3**
   b) What is Homoscedasticity ? What are the consequences of using OLS procedure in presence of Heteroscedasticity ? **7**

4. What is meant by Cointegration ? Discuss the methodology for testing of cointegration as suggested by Engle-Granger with suitable example. **10**

5. a) Explain the concept of Trend Stationary and Difference Stationary Process. **5**
   b) Distinguish between Random Walk with Drift and Random Walk without Drift. **5**

P.T.O.

6. a) Explain the concept ARIMA with suitable example. 4

b) In order to examine the nature of causality between the returns of three exchange rates against the US Dollar namely the Euro (REUR), the British Pound (RGBP) and the Japanese Yen (RJPY), a Granger causality test was applied to 1827 observations and the results are produced below.

Direction of Causality	Chi-sq	df	Prob.
RGBP → REUR	2.6178	1	0.1057
REUR → RGBP	3.9312	1	0.0491
RJPY → REUR	0.4739	1	0.4912
REUR → RJPY	1.2060	1	0.2721
RGBP → RJPY	2.4240	1	0.1195
RJPY → RGBP	1.1506	1	0.2834

State the null and alternative hypothesis of Granger causality test and comment on the causality between each pair of variables. 6

7. Briefly discuss the various estimation techniques available for modeling panel data. 10

8. a) What do you understand by coefficient of determination ? 2

b) In order to evaluate the effect of various firm-specific factors on the returns of a sample of 200 firms the following regression was estimated;

$r_i = 0.080 + 0.801\ s_i + 0.321\ mb_i + 0.164\ pe_i - 0.084\ beta_i$

se = (0.064) (0.147) (0.136) (0.420) (0.120)

R-squared = 0.6746 df = 195 $t_{0.05}$ (df = 195) = 1.980

F(4,195) = 31.1034 P-value(F) = 0.0001

Jarque-Bera = 0.2575 Prob.(Jarque-Bera) = 0.8792

Where ; r_i = percentage annual return for the stock

s_i = size of firm i measured in terms of sales revenue

mb_i = market to book ratio of the firm

pe_i = price/earnings (P/E) ratio of the firm

$beta_i$ = stock's CAPM beta coefficient.

i) Test the significance of each slope coefficient at 5 percent level.

ii) Comment on coefficient of determination from the model.

iii) Interpret the F-value.

iv) Test the assumption of the normality of error term. 8

9. a) What is meant by Qualitative response regression models. 5

b) The following regression model considers the data on home ownership Y(1 = owns a house, 0 = otherwise) and family income X (thousands of dollars) for 40 families. The output is as follows :

$\hat{Y}_i = -0.9457 + 0.1021X_i$

(0.1228) (0.0082)

t = (–7.7011) (12.4512)

$R^2 = 0.8048$ $t_{0.05}$ (df = 40) = 2.021.

Interpret the regression. 5
