

Name:

Enrolment No:



**UNIVERSITY OF PETROLEUM & ENERGY STUDIES
DEHRADUN**

End-Semester Examination 2022

Program/course : MA Economics

Semester : IV

Subject : Financial Econometrics

Max. Marks : 100

Code : FINC 8009P

Duration : 3 Hrs

No. of page/s : 5

SECTION A

Q1	Answer all the questions. Each Question will carry 2 Marks	10Qx2 M=20 Marks	CO
i.	Consider the model $Q^d = f(P, P^s, P^c, INC)$ where Q^d is quantity demanded of a particular product per month, P is the price of the product, P^s is the price of substitutes, P^c is the price of complements, and INC is monthly income. This equation represents _____. a. a non-linear model b. an economic model c. an econometric model d. an interval forecast	[2]	CO1
ii.	Why is a random error term included in an econometric model? a. Because many economic models have not been well developed yet and need to allow for inaccuracies. b. Because some people are irrational. c. Because there is intrinsic uncertainty in any economic activity due to individual decision making. d. Because most estimating techniques are not well suited to work with a deterministic model.	[2]	CO1
iii.	The parameters estimated using econometric methods are generally used for ____ or _____. a. testing hypotheses; predicting b. confirming; denying effects of policy c. validation; repudiation d. generating data; probability distributions	[2]	CO1

iv.	<p>Which of the following sections usually comes first in a research report?</p> <ul style="list-style-type: none"> a. State of problem. b. Description of data. c. Review of literature on the topic. d. Economic model. 	[2]	CO1
v.	<p>How do you find the first difference in y_t ?</p> <ul style="list-style-type: none"> a. $y_t - y_{t-1}$ b. $\frac{dy}{dt}$ c. $y_t - \bar{y}$ d. $(y_t - y_{t-1})^2$ 	[2]	CO1
vi.	<p>Which of the following is NOT a necessary condition for a variable to be stationary?</p> <ul style="list-style-type: none"> a. $E(y_t) = \mu$ b. $\text{var}(y_t) = \sigma^2$ c. $\text{cov}(y_t, y_{t+s}) = \text{cov}(y_t, y_{t-s}) = \gamma_s$ d. $E(y_t - y_{t-1}) = \pi$ 		CO1
vii.	<p>A stochastic process is best described as _____.</p> <ul style="list-style-type: none"> a. deterministic b. theoretical c. random d. mean reverting 	[2]	CO1
viii.	<p>Which non-stationary time series has a constant mean but non-constant variance?</p> <ul style="list-style-type: none"> a. Random walk b. AR(1) with linear trend 	[2]	CO1

	<p>c. Random walk with drift</p> <p>d. Deterministic trend</p>																						
ix.	<p>What is a spurious regression?</p> <p>a. Statistically significant but meaningless results generated by regression analysis of non-stationary data</p> <p>b. The results generated by regression analysis of a station variable dependent on a non-stationary series</p> <p>c. Regression analysis where endogenous and exogenous variables are reversed</p> <p>d. Regression analysis that is impossible due to lack of identification</p>	[2]	CO1																				
x.	<p>What is the null hypothesis of the Dickey-Fuller Test for testing with no constant and no trend?</p> <p>a. $y_t = y_{t-1} + v_t$</p> <p>b. $y_t = \rho y_{t-1} + v_t$</p> <p>c. $y_t = \alpha + \rho y_{t-1} + v_t$</p> <p>d. $y_t = \alpha + \rho y_{t-1} + \lambda t + v_t$</p>	[2]	CO1																				
	<p>Section B</p> <p>Attempt all the questions. Each question carries equal marks.</p>	4Qx5 M= 20 Marks	CO																				
Q2	<p>Fill in the blanks in the following ANOVA table:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Items</th> <th>Sum of squares</th> <th>df</th> <th>Mean square</th> </tr> </thead> <tbody> <tr> <td>Regression</td> <td>8552.73</td> <td>1</td> <td>?</td> </tr> <tr> <td>Residual</td> <td>337.273</td> <td>8</td> <td>?</td> </tr> <tr> <td>Total</td> <td>8890</td> <td>9</td> <td>?</td> </tr> <tr> <td colspan="2">R² = ?</td> <td colspan="2">F(1, 8) = ?</td> </tr> </tbody> </table>	Items	Sum of squares	df	Mean square	Regression	8552.73	1	?	Residual	337.273	8	?	Total	8890	9	?	R ² = ?		F(1, 8) = ?		[5]	CO2
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Q3	<p>What do you mean by linear trend model? Interpret the results given below, which represents a linear trend model, where the dependent variable is expenditure on service sector for the period 2000-2017. The result from the regression follows.</p> $ExServ_t = 15783.87 + 17633.76t$ <p>$t = (0.91) \quad (13.38) \quad r^2 = 0.8996$</p>	[5]	CO2
Q4	<p>What is regression through origin? Do you think CAPM model has no intercept? Explain.</p>	[5]	CO2
Q5	<p>What are various models used for estimating volatilities in the financial return data.</p>	[5]	CO2
<p>Section C</p> <p>Attempt all the questions. Each question carries equal marks.</p>		3Qx10 M=30 Marks	
Q7	<p>What do you mean by ARIMA model. Write all the steps to forecast a financial time series data.</p>	[10]	CO3
Q8.	<p>Suppose you have two series that you have tested and have found them to be cointegrated. You are interested in explaining the dynamics of the relative short-run movements of the series. Which of the following estimation choices should you use? Explain the reason</p> <ol style="list-style-type: none"> An ARDL model in levels A simple regression model with least squares An error-correction model An ARDL model in first-differences 	[10]	CO3
Q9	<p>Show how a standard AR(1) error model ($y_t = \alpha + \beta_0 x_t + e_t; e_t = \rho e_{t-1} + v_t$) can be rewritten as an ARDL(1,1) model.</p>	[10]	CO3
<p>Section D</p> <p>Answer all questions. Each Question carries 15 Marks.</p>		2Qx15 M= 30 Marks	CO
Q12	<p>Augmented Dickey-Fuller test for l_{FP} testing down from 30 lags, criterion AIC sample size 3982 unit-root null hypothesis: $a = 1$</p> <p>test with constant including 13 lags of $(1-L)l_{FP}$ model: $(1-L)y = b_0 + (a-1)y(-1) + \dots + e$ estimated value of $(a - 1)$: -0.000558878 test statistic: $\tau_c(1) = -1.59761$ asymptotic p-value 0.4838</p>		

	<p>1st-order autocorrelation coeff. for e: -0.000 lagged differences: F(13, 3967) = 3.252 [0.0001]</p> <p>with constant and trend including 13 lags of (1-L)l_FP model: $(1-L)y = b_0 + b_1*t + (a-1)*y(-1) + \dots + e$ estimated value of (a - 1): -0.0015488 test statistic: tau_ct(1) = -1.8604 asymptotic p-value 0.6749 1st-order autocorrelation coeff. for e: -0.000 lagged differences: F(13, 3966) = 3.250 [0.0001]</p> <p>Interpret the above results. Is there any difference between the two models?</p>	[15]	CO4
Q13.	If you have to model credit rating of a company, what are the variables you will include in your model? Explain in detail.	[15]	CO4