


<b>Name:</b>	
<b>Enrolment No:</b>	

**UPES**  
**End Semester Examination, May 2024**

**Course: Time Series Econometrics** **Semester: VI**  
**Program: BA (Hons.) Economics** **Time : 03 hrs.**  
**Course Code: ECON3016** **Max. Marks: 100**  
**Instructions:**

**SECTION A**  
**10Qx2M=20Marks**

S. No.	Question	Marks	CO
Q 1	Define the following	2	CO1
i.	Spurious regression	2	CO1
ii.	Stationary time series	2	CO1
iii.	Autocorrelation	2	CO1
iv.	Non-stationary time series	2	CO1
v.	Multicollinearity.	2	CO1
vi.	Cointegration.	2	CO1
vii.	Serial Correlation	2	CO1
viii.	Panel data econometrics	2	CO1
ix.	Phillips' Curve	2	CO1
x.	Discrete Stochastic Process	2	CO1

**SECTION B**  
**4Qx5M= 20 Marks**

Q 2	Decide if you agree or disagree with the following statement and give a brief explanation of your decision: <i>"Like cross-sectional observations, we can assume that most time series observations are independently distributed"</i>	5	CO2
Q3	Do you think that seasonality is not an issue when using time series observations?	5	CO2
Q4	Suppose you have annual data, and you want to test for the presence of first order serial correlation. With strictly exogenous regressors, how would you proceed?	5	CO2
Q5	Differentiate between cross sectional, time series and panel data analysis with suitable examples.	5	CO2

**SECTION-C**  
**3Qx10M=30 Marks**

Q 6	Consider the Durbin-Watson test:	10	CO3
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	$d = \frac{\sum(\hat{u}_t - \hat{u}_{t-1})^2}{\sum(\hat{u}_t)^2}$ <p>Determine the critical values of d. What steps will you follow to estimate “d”</p>		
Q7	What is an ARIMA process, and how is it used in time series analysis?	<b>10</b>	<b>CO3</b>
Q8	<p>Consider the following:  “Conditional on <math>X</math>, the errors in two different time periods are uncorrelated:  <math>Corr(u_t, u_s/X) = 0</math>, for all <math>t \neq s</math>.”  Explain the statement and its implication on the estimation of time series model.</p>	<b>10</b>	<b>CO3</b>
<b>SECTION-D</b> <b>2Qx15M= 30 Marks</b>			
Q9	<p>Consider the following regression results:  <math>\Delta X_t = 31.03 - 0.188X_{t-1}</math>  <math>se = (12.50) (0.080)</math>  <math>(t =) \quad (-2.35)</math></p> <p>a. Based on these results, is the time series stationary or nonstationary? How do you know?  b. If you were to use the usual ‘t’ test, is the observed ‘t’ value statistically significant? On this basis, would you have concluded that this time series is stationary?  c. From a and b, explain the properties of stationary data.</p>	<b>15</b>	<b>CO4</b>
Q10	<p>When the level of business expenditures of new plants and equipment of non-manufacturing firms in the US, <math>Y_t</math>, from 1960 to 1979, is regressed on the GNP, <math>X_{1t}</math>, and the consumer price index, <math>X_{2t}</math>, the following results are obtained by Dominick Salvatore:</p> $\hat{Y}_t = 31.75 + 0.08X_{1t} - 0.58X_{2t} \quad R^2 = 0.98$ $(6.08) \quad (-3.08) \quad d = 0.77$ <p>a. How do you know that autocorrelation is present?  b. Why is autocorrelation a problem?  c. How can you estimate the coefficient of autocorrelation?</p>	<b>15</b>	<b>CO4</b>