BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS:IMSc. **SEMESTER: VII**
BRANCH: QEDS **SESSION: MO/2025**

SUBJECT: ED405 TIME SERIES ECONOMETRICS

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	**BL**
Q.1(a)	Explain an ARIMA(p,d,q) process. How will you identify the orders p and q.	[5]	1	3
Q.1(b)	Suppose you estimate an ARIMA(p,d,q) model. What diagnostic checks you should carry out to ascertain the goodness of fit?	[5]	1	4
Q.2(a)	What is cointegration? In a single equation system, how will you identify if there is cointegration?	[5]	2	2,3
Q.2(b)	Describe the Error Correction Model in presence of cointegration. Can one use OLS to estimate the Error Correction Model? Explain.	[5]	2	3
Q.3(a)	Describe the Chow Test for identifying a structural break.	[5]	3	3
Q.3(b)	What test will you carry out to ascertain the number of structural breaks in a time series process. Explain.	[5]	3	3
Q.4(a)	If a time series follows ARCH(1) process can current values be used to predict future values? Explain. Show that past volatility can be used to describe current volatility.	[5]	4	3,4
Q.4(b)	Describe a GARCH(1,1) process. How are T-GARCH and E-GARCH models different from a GARCH process?	[5]	4	3
Q.5(a)	What is a periodogram? Where is it used? If the length of a cycle is 60 periods and the periodogram shows dominance at frequency 0.04 then what can you conclude from it?	[5]	5	4
Q.5(b)	Discuss how spectral density is estimated from a discrete periodogram.	[5]	5	4

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