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

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

SUBJECT: ED305 BASIC 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)	Describe a linear regression model with autocorrelation of order one. Draw the ACF plot of the residuals of this model. Label the diagram.	[4]	1	3,4
Q.1(b)	How will you estimate a linear regression model with autocorrelation.	[6]	1	1
Q.2(a)	What is attenuation bias? When do we observe it? Explain.	[5]	2	3
Q.2(b)	Explain why the relevance and validity conditions are required to identify the instrumental variable coefficients in a linear regression set up.	[5]	2	4
Q.3(a)	What are additive and multiplicative methods of decomposing a time series process. Explain the components.	[5]	3	2
Q.3(b)	Describe what information one gets from the autocorrelation function (ACF) of a time series process. Draw the ACF plot for a stationary time series.	[5]	4	2,3
Q.4(a)	Describe how you will determine the order of AR(p) process MA(q) process and ARMA(p,q) process. How will the ACF and PACF plots look like for each of these time series processes?	[6]	4	3
Q.4(b)	When is an AR(p) process causal? Explain.	[4]	4	4
Q.5(a)	In presence of trend and seasonality how will you forecast the values of a time series process $\{Y_t\}$ using smoothing methods?	[6]	5	3
Q.5(b)	Show that random walk with drift is a Difference Stationary Process.	[4]	5	3

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