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

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

SUBJECT: ED305 BASIC ECONOMETRICS

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	What is heteroskedasticity?	[2]	1	2
Q.1(b)	How is Breusch Pagan test for heteroskedasticity different from White test? Explain.	[3]	1	3
Q.2	You estimate the following regression equation using OLS: $$Y_t = \beta_0 + \beta_1 x_t + \epsilon_t$$ You suspect that there is autocorrelation of order 1. From the estimated OLS residuals how will you identify whether autocorrelation is present?	[5]	1	4
Q.3(a)	Suppose you are charged with ascertaining whether more screentime is adversely affecting students' learning outcomes. What regression equation will you estimate? Explain by highlighting the dependent variables, explanatory variables and control variables.	[3]	2	3
Q.3(b)	Will you include any fixed effects? Explain with reasons.	[2]	2	4
Q.4(a)	Suppose you use OLS to obtain the estimates of coefficients if the regression equation you specify in question 3. Are the estimated coefficients causal estimates? Explain your answer in reference to the validity of OLS assumptions in this case.	[5]	2	4
Q.5(a)	What is multicollinearity? Explain with an example.	[2]	2	2
Q.5(b)	$$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{2i} + \epsilon_t$$ Suppose you estimate the betas in the above equation using OLS. How will you identify if there is multicollinearity?	[3]	2	3

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