

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

CLASS: ISc/PRE-PHD
BRANCH: Quantitative Economics and Data Science

SEMESTER : IX/I
SESSION : MO/2025

SUBJECT: ED505 CROSS-SECTION AND PANEL 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.
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		CO	BL
Q.1(a)	Explain how proxy variables help in dealing with omitted variable bias.	[5] 1	3
Q.1(b)	Explain the conditions a proxy variable need to satisfy.	[5] 1	3
Q.2(a)	Explain the Hausman test for testing of endogeneity.	[5] 2	4
Q.2(b)	For what is the chow test used? Explain the test.	[5] 2	4
Q.3(a)	Express a system of simultaneous linear equations with m endogenous variables and k exogenous variables in matrix form.	[4] 3	6
Q.3(b)	Write the reduced form of this system of equations.	[4] 3	6
Q.3(c)	Under what conditions can you uniquely identify the coefficients of this system of equations.	[2] 3	5
Q.4(a)	State the two main advantages of 'panel data' over 'pooled data'.	[2] 4	4
Q.4(b)	Show that the within transformation and the first-differencing transformation methods can remove fixed effects from a panel data model.	[4] 4	5
Q.4(c)	Specify the considerations that determine the choice between the FE and the RE models.	[4] 4	5
Q.5(a)	Explain how 'the static panel data model' differs from 'the dynamic panel data model.	[2] 5	2
Q.5(b)	Explain why we cannot apply the usual OLS method of estimation in the case of dynamic panel data models.	[4] 5	4
Q.5(c)	Explain the instrumental variable method approach of estimation of dynamic panel data model.	[4] 5	4

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