

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

CLASS: IMSc.
BRANCH: QEDS

SEMESTER : VI
SESSION : SP/2025

SUBJECT: ED315 APPLIED 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)	Define the Laspeyres price index. How is the base year selected?	[5]	1 2
Q.1(b)	If the consumers change their consumption basket due to price rise and shift to cheaper alternatives, do you think that CPI calculated using the Laspeyres price index will be a good index to measure price rise over time? Explain. What should be done to avoid this problem?	[5]	1 4
Q.2(a)	What is poverty line? Discuss the reasons for which over time poverty line calculations deviated from a calorie-based norm?	[5]	2 3
Q.2(b)	Define a log-normal distribution. Write its pdf and cdf. What is the Gini coefficient of a log-normal distribution?	[5]	2 2
Q.3(a)	Use the Slutsky equation to answer whether the following statement is True or False. "In a two good world the compensated (Hicksian) demand curve is always steeper than the ordinary (Marshallian) demand curve."	[5]	3 4
Q.3(b)	Suppose a consumer's maximization problem is given by $u = x^\alpha y^{1-\alpha}$, where x and y are two commodities respectively and $0 < \alpha < 1$. The prices of x and y are p_x and p_y respectively and M is the consumer's income. Find the Marshallian demand functions of x and y . Use the Roy's identity to derive how much the consumer's maximized utility will change for a unit change in price of x .	[5]	3 3
Q.4(a)	What do you mean by technical efficiency of a firm? In a single input-single output framework, show that for CRS production function input oriented technical efficiency is equal to output oriented technical efficiency.	[5]	4 4
Q.4(b)	What are the differences between Data Envelopment Analysis and Stochastic Frontier Analysis in measuring technical efficiency of firms.	[5]	4 2
Q.5(a)	Define Compensating Variation and Equivalent Variation. What is the purpose of these two measures? How are these two measures different?	[5]	5 2
Q.5(b)	Suppose consumers face J mutually exclusive alternatives. Explain how multinomial logit model can be used to estimate the effect of price changes of the alternatives on consumers' choice.	[5]	5 3

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