

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

CLASS: IMSc
BRANCH: CQEDS

SEMESTER : I
SESSION : MO/2024

SUBJECT: ED24105 INTRO. TO ECONOMICS & ESSENTIAL MATHEMATICS

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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Q.1	Assume a simple three sector economy which comprises of consumers, producers and the government. Total income (Y) is given by sum of total consumption (C), (I) investment by producers and government expenditure (G). Consumption is given by a fixed amount of 65 units plus 0.7 times the total income. Investment similarly is 50 units in addition to 0.1 times the income of the economy. With government spending a total of 20 units find the equilibrium values of income and consumption in this economy by the matrix method applying Cramer's rule.	[10] 1	3,5
Q.2	The utility Vedant derives from consuming chocolates (C) and momos (M) is given by the utility function $U = 40C^{0.25}M^{0.25}$. If chocolates cost 4\$ a piece and momos 10\$ a plate and Vedant has a total of 600\$ to spend, what combination of the two items will maximize his utility? What will be the maximum value of utility? What happens to this value if chocolates now cost 5\$ a piece?	[5+2+3] 2	2,3
Q.3	Draw and explain the circular-flow diagram. Now identify the parts of the model that correspond to the flow of goods and services and the flow of rupees for each of the following activities at any given point of time: Rama goes to the market and buys 3 cartons of milk every day and pays the grocery shopkeeper 50 rupees. She goes to work for a music company that pays her 1000 rupees monthly. The music company sells music CDs each at a price of 100 rupees to music enthusiasts in the market. That grocery shopkeeper hires Rama's friend Charan to assist him in the shop and pays him 500 rupees monthly. Charan again goes to the market to buy one music CD every month.	[3+7] 3	1,4
Q.4(a)	If you are the Economic Advisor at Niti Aayog, on what bases would you differentiate night street halogens from any privatized commodity and encourage the government to raise expenditure on providing them?	[5] 4	4
Q.4(b)	Revise the four principles you think every economic agent should follow by taking decisions along their path in life.	[5] 4	1
Q.5(a)	The supply and demand for green scooty are described by the following equations: Supply: $Q_s = 3P + 90$ Demand: $Q_d = 500 - 5P$.	[5+5] 5	4,5
	i) Graph (not to scale) the supply curve and the demand curve and find the equilibrium price and quantity.		
	ii) Suppose there is a demand hike for green scooty by students in BIT campus in a initiative to reduce their carbon footprints such that now $Q_d = 200 - 2P$. Find out the new equilibrium and explain in detail the mechanism through which market attains that new equilibrium.		