

Mahindra University Hyderabad
École Centrale School of Engineering
Mid-Term
Program: BTech Branch: All

Subject: Mathematical Techniques for Principles of Economics (HS3219)

Name:

Registration no:

Date: 20-03-2024

Start Time: 2.30 pm

Time Duration: 90 minutes

Max. Marks: 30

Answer any 6 questions. Each question carry 5 marks

1. a. Do you think printing currency notes without limit in order to alleviate poverty and inequality is a good idea (Yes/No)? Briefly explain why. (1)
b. How will the excessive printing of currency notes impact the GDP of a country. Explain in terms of changes to nominal and real GDP. Elucidate the same with differences between nominal and real GDP (2).
c. The nominal GDP of the base year 2020 is Rs. 89 lakhs. If the GDP deflator and nominal GDP in year 2021 is 114 and Rs. 99 lakhs respectively, calculate the real GDP for the years 2020 and 2021. (2)
2. a. An IC slope downwards to the right and IC's do not cross each other. Why? (2)
b. Elucidate on the slope of IC? (1)
c. What would be the shape of IC in the following cases (2)
 - If Bob is completely indifferent between two goods
 - Getting one additional good of B gets Jane no satisfaction unless she obtains one additional good of A also
3. Nikitha owns a biriyani joint and her total revenue in the financial year 2022 is Rs. 10 lakhs; the price of each biriyani being Rs. 200. She decides to increase the price to Rs. 250. Her total revenue fell to Rs. 8 lakhs in the financial year 2023 as a result.
 - a. Do her customers have an elastic or inelastic demand? Portray that in a diagram with price and quantity axes. (2.5)
 - b. What is the relationship between elasticity and total revenue? As an economist, what is your suggestion to Nikitha (with regard to the price change)? (2.5)
4. The present GDP of a country is Rs. 80,00,000 (80 lakhs). The following additional transactions were done, examine whether they will affect the GDP. Substantiate your answer.
 - a. Rahul, an Indian citizen spends Rs. 1 lakh to buy a ring for his fiancée in a shop in New York

- b. India imported textiles worth Rs. 2 lakhs from China
- c. Govt. of India decided to spend Rs. 8 lakhs on unemployment benefits
- d. An Indian car company build Rs. 20 lakh worth of cars, but customers only bought Rs. 10 lakh worth of them
- e. What is the total GDP, acceding to the above changes.

5. Identify the kind of good.

- a. The cross-price elasticity for apples and oranges are 1.2. What kind of goods are apples and oranges?
- b. A 10 percent increase in income brings about a 15 percent decrease in the demand for bread and 8 percent increase in the demand for meat. What kinds of goods are bread and meat?
- c. A 10 percent increase in price didn't result in a change in the quantity demanded of insulin. What kind of good is insulin?
- d. Yesterday, the price of Amul milk was Rs. 30 a carton, and Julie was willing to buy 2 cartons. Today, the price has gone up to Rs. 35 a carton, and Julie stopped buying. What kind of good Amul milk is for Julie?
- e. An increase in the price of Supreme chairs from Rs. 30 to Rs. 60 resulted in no change in total revenue from Rs. 300. What kind of goods are supreme chairs?

6. In 1980, the price of egg was Rs. 20; but due to mechanization of poultry farms over the years, the price of eggs fell to Rs. 5 in 2023. But the demand of eggs which was 10,000 in 1980, increased to only 12,000 in 2023. Though there was a rise in demand, it wasn't as drastic as the rise in supply. The equilibrium quantity of eggs increased from 5000 to 20,000 over the years.

- a. Calculate the elasticity of demand for eggs over the years 1980 to 2023.
- b. Portray the scenario in graph considering the changes in demand and supply.

7. There is an option of choosing either a fixed income job or a commission-based job

	OUTCOME 1		OUTCOME 2	
	Probability	Income (\$)	Probability	Income (\$)
Job 1: Commission	.5	4000	.5	2000
Job 2: Fixed Salary	.99	3020	.01	1020

- a. Calculate the expected income, variance and standard deviation of the two jobs (2)
- b. Based on the values obtained, reflect on the job preferences for risk averse, risk loving and risk neutral people. Which of these jobs would they prefer? Briefly pinpoint why? (3)