Indian Statistical Institute
Bachelor of Statistical Data Science
Year 2024, Semester 1
Mid-Semester Examination
Economics 1
Full Marks 30

Answer all questions.

1. The table below shows the supply and demand for movie tickets in a city.
   a) Identify the equilibrium.
   Then calculate in a table the effect of the following two changes and identify the new equilibria.
   b) Three new nightclubs open. They offer decent bands and have no cover charge, but make their money by selling food and drink. As a result, demand for movie tickets falls by six units at every price.
   c) The city eliminates a tax that it placed on all local entertainment businesses. The result is that the quantity supplied of movies at any given price increases by 10%.

Price per ticket	Quantity demanded	Quantity Supplied
$5.00	26	16
$6.00	24	18
$7.00	22	20
$8.00	21	21
$9.00	20	22

(1+2+2)

2. Suppose the utility function of the consumer for commodity x and y are given as

$$U = x^{\frac{1}{3}}y^{\frac{2}{3}}$$

The price of commodity x is 4 per unit and that of commodity y is 2 per unit. The total income of the consumer is 24. Find the optimal choices of the consumer for commodities x and y. (5)

3. The meal plan at University A lets students eat as much as they like for a fixed fee of $500 per term. The average student there eats 100 kg of food per term. University B charges students $500 for a book of meal tickets that entitles the student to eat 100 kg of food per term. If the student eats more than 100 kg, he or she pays extra; if the student eats less, he or she gets a refund. If the students are rational and have the same appetites at A and B, where will average food consumption be higher? (5)

4. Draw a production possibility for a country producing only computers and wheat. What determines the shape of the production possibility frontier? If an improved method to produce wheat is discovered how the production possibility frontier would be affected. (2+1.5+1.5)

5. Use calculus to prove that the elasticity of demand is a constant ε everywhere along the demand curve whose demand function is $q = Ap^{\varepsilon}$. (5)

6. Lovers of classical music persuade Congress to impose a price ceiling of $40 per concert ticket. As a result of this policy, do more or fewer people attend classical music concerts? Explain. (5)

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