KIIT Deemed to be University
Online Mid Semester Examination(Autumn Semester-2020)

Subject Name & Code: Engineering Economics HS 2002
Applicable to Courses: 3rd semester B Tech

Full Marks=20 **Time:1 Hour**

SECTION-A(Answer All Questions. All questions carry 2 Marks)

Time:20 Minutes **(5×2=10 Marks)**

<table>
<tr><th>Q. No</th><th>Question Type(MCQ/ SAT)</th><th>Question</th><th>CO Mapping</th></tr>
<tr><td>Q.No:1 (a)</td><td>SAT</td><td>The Price elasticity of demand of a good is given as 0.8. If its price rises by 50%, calculate the percentage increase in its demand.</td><td>CO 1</td></tr>
<tr><td></td><td></td><td>When the price of a good rises from 20 per unit to 30 per unit, the Total revenue of the firm producing these good rises from 100 to 300. Calculate the price elasticity of supply.</td><td>CO2</td></tr>
<tr><td></td><td></td><td>Calculate price elasticity of demand if quantity demanded of a commodity rises by 20% due to 8% fall in its price. Identify the type of product based on the elasticity value.</td><td>CO2</td></tr>
<tr><td></td><td></td><td>Price elasticity of demand of a commodity is (–) 2. A consumer demands 50 units of this commodity when its price is ` 10 per unit. At what price he will demand 40 units of this commodity?</td><td>CO 1</td></tr>
<tr><td>Q.No:1 (b)</td><td></td><td>What are 'Veblen goods'? Give examples.</td><td>CO 1</td></tr>
<tr><td></td><td></td><td>What type of goods are called 'Giffen goods'? What is the shape of their demand curve and why?</td><td>CO 1</td></tr>
<tr><td></td><td></td><td>Explain any two factors which can cause a shift in the supply curve with diagram.</td><td>CO2</td></tr>
<tr><td></td><td></td><td>Define Gross National Product (GNP) at Market Price.</td><td>CO 1</td></tr>
<tr><td>Q.No:1 (c)</td><td></td><td>What is Marginal rate of Substitution (MRS)? Given the following indifference schedule, find the Marginal rate of Substitution (MRS) in the schedule.
Indifference Schedule
<table>
<tr><th>Combinations</th><th>Units of Good X</th><th>Units of Good Y</th><th>Utils</th><th>MRS</th></tr>
<tr><td>A</td><td>1</td><td>8</td><td>Uo</td><td>?</td></tr>
<tr><td>B</td><td>2</td><td>4</td><td>Uo</td><td>?</td></tr>
<tr><td>C</td><td>3</td><td>2</td><td>Uo</td><td>?</td></tr>
</table></td><td></td></tr>
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			D	4	1	Uo	?

		Given the following market schedule, depict the market situation(shortage/surplus/equilibrium) in the given column.	CO2

Price per unit	Demand	supply	Market situation
1	500	100	
2	400	200	
3	300	300	
4	200	400	
5	100	500	

		In an attempt to increase sales and profits, a firm is considering 10% increase in price. If the price elasticity of demand is -1.5, would there be increase or decrease in total revenue.	CO 1
		The income of a person is Rs 1000 and the quantity demanded for a product is 2000. When his income decreased to Rs 60, the quantity demanded decreases to 1500 units. Find the Income elasticity of the product and identify the type of good.	CO2
Q.No:1 (d)		If you are to receive Rs 2 lakhs after 4 years at 6% rate of interest, how much have you deposited now?	CO2
		If a person deposits 5 lakhs now at 8% rate of interest compounded annually, how much will you receive after 7 years.	CO 1
		What is the total mature value of Rs 50000 deposited each year for 6 years at 10% rate of interest compounded annually?	CO 1
		Find the effective rate of 12% annual rate of interest compounded monthly?	CO2
Q.No:1 (e)		Complete the following table :	CO2

Price of Apples (per kg)	Quantity sold (in kg) per day	Total Revenue (TR)	Average Revenue (AR)	Marginal Revenue (MR)
90	?	900	?	?
80	20	?	?	?
70	?	2100	?	?
?	?	3600	60	?
50	?	2500	?	?

		A firm charges $800 for its unique word processor. If total revenue is $56,000 in July, how many word processors were sold that month?	CO2
		Nathan and Joe are shopping for video games. Nathan's demand function for video games is Q = 30 - 3P, and Joe's demand function is Q = 48 - 4P. What will their combined demand be if the price is $5?	CO2
		How long will it take for Rs 1 lakh to grow to Rs 5 lakhs at 6% rate of interest compounded annually?	CO2

SECTION-B(Answer Any One Question. Each Question carries 10 Marks)

Time: 30 Minutes **(1×10=10 Marks)**

Question No	Question	CO Mapping
Q.No:2	(a) A shirt company faces the following demand function Q = 40000 – 2P + 2Y where, Q = demand for shirts, P = Price of Shirts and Y = Per capital income of the consumer Presently P = Rs. 2000 and Y = Rs. 10000 (i) Find the price elasticity of demand. Give your opinion about what effect a rise in price would have on the Total Revenue of the company. (b) Given the demand and supply functions as Q = 20000 – 8P (Demand) Q = 8000 + 2P (Supply) Find the price at the equilibrium point. Check that demand and supply are equal at the equilibrium point. (c) KALA, a businessman received the following amounts from his bank for an initial deposit which is compounded annually at the interest rate of 8 percent. Find the initial deposit that KALA made in the bank. End of year — Amount received ($) 1 — 10000 4 — 10000 6 — 10000 8 — 10000 9 — 10000	[3+3+4] CO 2 and CO 3
Q.No:3	(a) A shirt company faces the following demand function Q = 40000 – 2P + 4Y where, Q = Demand for shirts P = Price of shirts Y = per Capital Income Currently P = Rs. 2000 and Y = Rs. 10000 (i) Find the income elasticity of demand. Mention whether this product is inferior or normal. Give your comment on the demand for the shirt when income increases. (b) Given the demand function of a producer as P = 100 – 4Q	[3+3+4] CO 2 and CO 3

	where P = Price and Q = Quantity. Find the value of price elasticity when Marginal Revenue (MR) is zero. (c) Elvis deposited an equivalent amount of $20000 at the end of each year for 20 years in his account. At the end of 15^{th} year he deposited an additional amount of $12000 in the account. His money was growing at the interest rate of 7 percent compounded per annum. Decide the maturity amount that Elvis would have got from his account.	
Q.No:4	(a) JULIA is a home maker in the USA. She sells her handmade chocolate to earn some money. She sells 100 dozen chocolate for $8 a dozen. This is the weekly sales. She increases the price to $12 per dozen and sells 80 dozens. What is the price elasticity of demand? Using this price elasticity value, advise JULIA if she should raise or reduce the price for increasing her Total Revenue (TR). b) A consumer has the money income of $48. He spends all his income on two goods X and Y. Price of good X (P_X) is $8 and that of good Y ($P_Y$) is $4. (i) Draw a budget line for the consumer (ii) What will be the Marginal Rate of Substitution X for Y (MRS_{XY}) when the consumer is maximizing the utility? c) LEMON and ZEMON are twin sisters. They have got two separate saving accounts in a bank. LEMON makes equal end of year deposits in her account and it is calculated that she will receive a sum of Rs.2000000 at the end of 20 years. If ZEMON wants to have the same amount in her account at the end of 20 years, what annual deposit she should make at the end of each year for the same time period. Money grows at 10 percent annual compounding.	[3+3+4] CO 2 and CO 3
Q.No:5	(a) After the outbreak of COVID-19 in India it is found that demand for cars has become highly elastic. Market studies indicate that price elasticity for cars stands at 2.4 in the country. Now the income elasticity of demand for cars is +1.5. Price of car decreases by 10 percent and per capita income drops by 30 percent. Assess the effect of decrease in the price of car and per capita income on the demand for car. (b) The supply and demand curves for steel plates are given by the following equations. Q = 2P (Supply) Q = 500 – 3P (Demand) (i) Find the market equilibrium price. (ii) If a GST of Rs.10 per unit is imposed on the supplier, find the price that the consumer has to pay now. Is the demand more elastic? (c) Your Parents have taken a study loan of Rs.1000000 from a bank for your higher education at the rate of interest 6 percent compounded annually. They are repaying the loan amount in yearly installments for 20 years. Do you know the yearly installment that your parents are paying to the bank?	[3+3+4] CO 2 and CO 3
Q.No:6	(a) Cross price elasticity between bus and metro train travels in Delhi city is +2.2. Because of the Corona situation, number of passengers in	[3+3+4] CO 2 and

	bus travel has fallen. On the other hand to manage the operating expenses, bus union in the city has decided to increase the bus fare by 12 percent. What will be the effect of the bus fare rise on the metro train travels? (b) A consumer has the money income of $45. He spends his entire income on two goods A and B. Price of good A (P_A) is $5 per unit and that of good B (P_B) is $10. The Marginal Utilities (MUs) of the two goods are given in following table. Find the quantity of two goods consumer has to buy when he wants to maximize the utility. Quantity MU_A MU_B 1 100 160 2 80 150 3 60 120 4 50 110 (c) Delisha deposited on amount Rs.20000 at the end of first year in her bank account. Her deposit amount increases thereafter with an annual increment of Rs.1000 for the next 11 years. The bank gives an interest rate of 4 percent compounded per annum. Elisha wants to deposit an annual equivalent amount in her account for the same time period so that she will receive the equal compound amount at the end of the deposit period with Delisha. Find the equivalent amount that Elisha has to deposit at the end of each year.	CO 3
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