



**AUTUMN MID-SEMESTER EXAMINATION-2024**  
**Kalinga Institute of Industrial Technology, Deemed to be University**  
**Semester: 5<sup>th</sup> Semester (B.Tech)**

**Subject: ENGINEERING ECONOMICS(Regular) (HS30101)**

**Time: 1.5 hours**

**Full Marks: 20**

*Answer any FOUR questions including question No.1 which is compulsory.*

*The figures in the right-hand side indicate full marks.*

**All parts of a question should be answered at one place only.**

Question No	Questions	CO Mapping	Marks
Q1.	Answer the following questions.		[1x5]
a	Rohan wants to have Rs 900000 at the end of 9 <sup>th</sup> year and Rs 1000000 at the end of 10 <sup>th</sup> year from now for purchasing a plot in his locality. If money is growing at 9.5%, what is the amount of money he should deposit in her account now?	CO4	1
b	You are using the premium credit card of HDFC bank. The annual nominal rate of interest charged by the bank is 13 percent. If compounding is done monthly, what would be the effective rate of interest per annum?	CO4	1
c	What do the shifts in Demand curve imply?	CO2	1
d	Explain why Indifference curve is convex to the origin.	CO2	1
e	Write an expression to find the Marginal Revenue (MR) with the help of Average revenue (AR) and Price elasticity of Demand.	CO2	1
Q.2	<p>a) The demand function for Parker Pen has been estimated as  <math>Q = 700 - 2P + 0.02Y</math>  Where Q = demand, P = price of pen per unit, Y = per capita income  (i) Find the price elasticity and income elasticity of demand when <math>P = ₹10</math> and <math>Y = ₹1000</math>  (ii) If the Parker pen seller wants to increase the Total Revenue, what advice you will give him on the basis of the price elasticity value.  (iii) If this Parker Pen is not an inferior good how the sales of the parker pen would change when income rises.  b) Explain Consumer's Equilibrium in case of two commodities with the help of Budget Line and Indifference Curve.</p>	CO2	[3+2]
Q.3	<p>a) Given, the cross-price elasticity of demand between Paracetamol and Zerodol SP is +0.5.   (i) How these medicines are related? If you expect a 15% increase in the demand for Paracetamol, what change in the price of Zerodol SP would you expect?  (ii) Suppose there is a 25% increase in the price of Zerodol SP and a 60% decrease in the demand for Paracetamol, find the cross elasticity between them.  (iii) Suppose cross elasticity between Paracetamol and Zerodol SP is +1.3 and there is a 15% increase in demand for Paracetamol. If Zerodol SP is sold at Rs 200 per unit, what would be the new price of Zerodol SP now?   b) The demand equation for a demand curve is   <math>P = 72 - 3Q</math>   (i) Find the Price and Quantity when Total Revenue (TR) is maximum.  (ii) Find the value of Marginal Revenue (MR) when TR is maximum.  (iii) Determine the price elasticity of demand when TR is maximum.</p>	CO2	[3+2]

Q.4	<p>a) Hariharan plans to deposit \$15,600 annually at the end of each year for 11 years into an account that earns 5.6% interest compounded annually. What will be the total amount in his account at the end of the 11-year period? On the other hand, Honey wants to receive the same final amount at the end of 11 years but prefers to make a single deposit now. How much should Honey deposit now to match the future value of Hariharan's deposits?</p> <p>b)Describe the following factors determining the price elasticity of demand.</p> <p>(i) Income of the Consumer</p> <p>(ii) Nature of Commodities</p>	CO2, CO4	[3+2]																				
Q.5	<p>a) A company aims to analyze the trend in its annual expenses (in thousands of rupees) over the past 9 years. The provided table includes the expense data for these years. Using the Least Squares Method, fit a trend line equation to this data and forecast the expense value for the year 2024.</p> <table><tr><th>Year</th><th>Annual Expenses (Y)</th></tr><tr><td>2012</td><td>40</td></tr><tr><td>2013</td><td>45</td></tr><tr><td>2014</td><td>42</td></tr><tr><td>2015</td><td>41</td></tr><tr><td>2016</td><td>60</td></tr><tr><td>2017</td><td>30</td></tr><tr><td>2018</td><td>34</td></tr><tr><td>2019</td><td>25</td></tr><tr><td>2020</td><td>20</td></tr></table> <p>b)Axis Bank has provided a loan of Rs. 14 lakhs to VVDN Private Limited for purchasing an equipment, with an interest rate of 10% compounded annually. The loan is to be repaid in 20 annual installments. Determine the amount of each installment that the company needs to pay. Additionally, calculate the total future value of the loan repayments and find the absolute difference between this total amount and the original loan amount.</p>	Year	Annual Expenses (Y)	2012	40	2013	45	2014	42	2015	41	2016	60	2017	30	2018	34	2019	25	2020	20	CO2, CO4	[3+2]
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