



Sample Question Format
(For all courses having end semester Full Mark=50)

KIIT Deemed to be University
Online End Semester Examination(Spring Semester-2021)

Subject Name & Code: ENGG ECONOMICS

Applicable to Courses:

Full Marks=50


Time:2 Hours

SECTION-A(Answer All Questions. Each question carries 2 Marks)

Time:30 Minutes

(7×2=14 Marks)

<u>Question No</u>	<u>Question Type (MCQ/SAT)</u>	<u>Question</u>	<u>CO Mapping</u>	<u>Answer Key (For MCQ Questions only)</u>
<u>Q.No:1</u>		Price of mixture is fixed at Rs.160 at the market equilibrium point in October, 2021. In November, 2021 because of cold condition the demand curve for mixture shifts to the right, as a result (i) The equilibrium price will decrease (ii) The equilibrium price will increase (iii) The equilibrium price will remain unchanged (iv) None of these	CO1	ii
		Other factors remaining constant if the population of your city increases this will cause (i) A rightward shift in the demand curve and an increase in price (ii) A leftward shift in the demand curve and a decrease in price (iii) A rightward shift in the demand curve and a decrease in price (iv) None of these	CO1	i
		You have drawn an indifference curve (IC) for two goods X and Y and found that your IC is right-angled. The goods X and Y for you are (i) Perfect substitutes (ii) Perfect complementaries (iii) Unrelated (iv) None of these	CO1	ii
		When a GST of Rs.70 per unit is imposed on a product it is observed that Rs.40 is borne by the consumer and the rest is borne by the seller. So we can say (i) The consumer is more elastic (ii) The consumer is less elastic (iii) The seller is less elastic (iv) None of these	CO1	ii
<u>Q.No:2</u>		You calculate the cross price elasticity between two goods X and Y and it stands at +1.3. The goods are (i) Complementaries (ii) Perfect complementaries (iii) Substitutes (iv) None of these	CO1	iii
		As a consumer you would expect to have positive income elasticity of demand in case of	CO1	ii

		(i) Inferior goods (ii) Normal goods (iii) Giffen goods (iv) All of these		
		A particular brand of washing soap has many number of substitutes available in the market. If you are to comment on the price elasticity of demand (e) of this washing soap you would say (i) e is greater than 1 (ii) e is less than 1 (iii) e is neither greater than 1 nor less than 1 (iv) None of these	CO1	i
		Durgapur Steel Plant uses electricity as the main source of energy for manufacturing steel. The plant has many important uses of electricity which can't be avoided. As an engineering economist you would comment that (i) Steel plant is more elastic for electricity (ii) Steel plant is perfectly elastic for electricity (iii) Steel plant is less elastic for electricity (iv) None of these	CO1	iii
Q.No:3		In a certain production process the percentage increase in inputs is more than the percentage increase in output. This production process faces (i) Increasing Return to scale (ii) Diminishing Return to scale (iii) Constant Return to scale (iv) None of these	CO1, CO2	ii
		In short run production function (law of variable proportion) throughout the stage of diminishing return which of the following relation is true. (i) Marginal Product of Labour (MP_L) is greater than the Average Production of Labour (AP_L) (ii) Average Production of Labour (AP_L) is greater than the Marginal Product of Labour (MP_L) (iii) Average Product of Labour (AP_L) is equal to the Marginal Product of Labour (MP_L) (iv) None of these	CO1, CO2	ii
		From the following figure identify the return to scale  (i) Increasing Return to scale (ii) Diminishing Return to scale (iii) Constant Return to scale (iv) None of these	CO1, CO2	iii
		In Law of variable proportion we measure (i) The return to a change in factor proportion (ii) The return to a change in the scale (iii) The return to the fixed factor (iv) All of these	CO1, CO2	i
Q.No:4		Total sales at 5000 units of output is Rs.60000 and the variable cost of producing this output is Rs.20000. The Profit-volume ratio (P/V ratio) at this output level is (i) 66.66 percent	CO1, CO2	i

	(ii) 25 percent (iii) 33.33 percent (iv) 8.33 percent		
	Total sales of a company is Rs.60000 and total variable cost is Rs.20000. If the total fixed cost is Rs.30000, the break-even sales value is (i) Rs.45000 (ii) Rs.50000 (iii) Rs.60000 (iv) None of these	CO1, CO2	i
	If you derive short-run supply curve from marginal cost (MC) curve which of the following is true about short-run supply curve (i) The portion of MC beyond its minimum point is the supply curve. (ii) The portion of MC beyond the minimum Point of Average Variable Cost (AVC) curve is the supply curve. (iii) The portion of MC beyond the minimum point of Average Cost (AC) curve is the supply curve. (iv) All of these	CO1, CO2	ii
	The minimum point of Average Cost (AC) curve lies to the right of the minimum point of Average Variable Cost (AVC) curve because (i) AC includes AVC that rises beyond a certain output level (ii) AC includes Average Fixed Cost (AFC) which decreases with increase in output (iii) AVC is derived from the Total Variable Cost (TVC) curve (iv) None of these	CO1, CO2	ii
Q.No:5	For a accepting a project proposal on the basis of Net Present Value (NPV) and Internal Rate of Return (IRR) which of the following statements is true (i) IRR should be equal to the discount rate used for calculating NPV (ii) IRR should be less than the discount rate used for calculating NPV (iii) IRR should be greater than the discount rate used for calculating NPV (iv) All of these	CO1, CO2, CO3	iii
	In case of the interest formula, “Uniform Payment Series Compound Amount” the objective is to find (i) Future worth of n equal payments (ii) Present worth of n equal payments (iii) Equivalent amount of a Future Worth amount (iv) Equivalent amount of a Present Worth amount	CO1, CO2, CO3	i
	A Bank agent convinced you to buy a credit card. The bank charges a monthly interest of 1.25 percent on the credit card and compounding is done at the end of every month. If you calculate the effective interest rate before you decide to buy the same then the effective interest rate would be (i) Equal to the annual nominal interest rate (ii) Less than the annual nominal interest rate (iii) More than the annual nominal interest rate (iv) Less than 15% per annum	CO1, CO2, CO3	iii
	In case of the interest formula “Uniform Payment Series Sinking Fund” the objective is to deposit (i) Equivalent amount (A) at the end of every interest period and realize the present worth amount (P) (ii) Equivalent amount (A) at the end of every interest period and realize a future sum (F) (iii) A single amount (P) now and realize a future sum (F) (iv) All of these	CO1, CO2, CO3	ii

Q.No:6	Under perfect competition market a firm earns normal profit when (i) Average Cost (AC) is greater than Average Revenue (AR) (ii) Average Revenue (AR) is greater than Average Cost (AC) (iii) Average Revenue (AR) is equal to Average Cost (AC) (iv) None of these	CO1, CO2, CO3	iii
	Under monopoly market if you study the relation between the firm and industry you find (i) Industry is bigger than the firm (ii) Industry and firm are the same (iii) Firm is bigger than the industry (iv) None of these	CO1, CO2, CO3	ii
	The monopolist fixes the price on (i) The Marginal Revenue (MR) line (ii) The Average Revenue (AR) line (iii) Neither MR nor AR, rather on the Total Revenue (TR) curve (iv) All of these	CO1, CO2, CO3	ii
	In an industrial estate there are large number of firms selling a single product and no single firm has any control over the market price. The market price is fixed by market demand and supply. This is an example of (i) Perfect competition market (ii) Monopoly market (iii) Both perfect competition and monopoly market (iv) None of these	CO1, CO2, CO3	i
Q.No:7	Which of the following expressions is used to find GDP_{MP} (i) $GNP_{MP} - \text{Depreciation}$ (ii) $GNP_{MP} - \text{Net Factor Income from Abroad}$ (iii) $GNP_{MP} - \text{Net Indirect Tax} + \text{Depreciation}$ (iv) None of these	CO1, CO2, CO3	ii
	Which of the following Expressions is used to get NDP_{FC} (i) $GDP_{MP} - \text{Depreciation} - \text{Net Indirect Tax}$ (ii) $NNP_{FC} + \text{Net Factor Income from Abroad}$ (iii) $NNP_{FC} + \text{Depreciation}$ (iv) None of these	CO1, CO2, CO3	i
	Which of the following expressions is used to get GNP_{FC} (i) $NNP_{FC} - \text{Depreciation}$ (ii) $NNP_{FC} + \text{Depreciation} - \text{indirect Tax} + \text{Subsidies}$ (iii) $NNP_{FC} + \text{Depreciation}$ (iv) None of these	CO1, CO2, CO3	iii
	Select the correct expression from the following that finds GDP_{FC} (i) $NNP_{MP} + \text{Depreciation} - \text{Net Factor Income from Abroad} - \text{Net Indirect Tax}$ (ii) $NNP_{MP} - \text{Depreciation} + \text{Net Factor Income from Abroad} - \text{Net Indirect Tax}$ (iii) $NNP_{MP} + \text{Depreciation} - \text{Net Factor Income from Abroad} + \text{Net Indirect Tax}$ (iv) None of these	CO1, CO2, CO3	i

SECTION-B(Answer Any Three Questions. Each Question carries 12 Marks)

Time: 1 Hour and 30 Minutes

(3×12=36 Marks)

<u>Question No</u>	<u>Question</u>	<u>CO Mapping (Each question should be from the same CO(s))</u>
<u>Q.No:8</u>	<p>(a) BMW luxury and Lamborghini luxury are two good brands of luxury cars. The cross price elasticity between them is +2.8 in the USA market.</p> <p>(i) How an increase in the price of BMW luxury will affect the demand for Lamborghini luxury in the market?</p> <p>(ii) Suppose the current sales of Lamborghini in the market is 100000 nos. If the price of BMW luxury increases by 20 percent what will be the sales of Lamborghini luxury now?</p> <p>(iii) Income elasticity for car is +1.8. If income drops by 20% how the car companies will be influenced in terms of the demand for cars?</p> <p>(b) Given the demand and supply function for a product as $Q = 1500 - 3P$ (Demand) $Q = 1100 + 2P$ (Supply)</p> <p>(i) Find the equilibrium Price and Quantity of the product.</p> <p>(ii) If a GST of \$50 is imposed on the product, find its effect on the equilibrium Price and Quantity.</p> <p>(iii) Who is more elastic, the consumer or the seller? With the help of demand and supply curve draw a suitable diagram to show the effect of GST on the equilibrium Price and Quantity.</p> <p>(a) The demand function faced by a company for its product is $Q = 14000 - 3P + 3Y$ where $Q =$ demand $P =$ Price per unit $Y =$ Per capita income</p> <p>(i) Find the price elasticity and income elasticity of demand when $P = \\$100$ and $Y = \\$2500$.</p> <p>(ii) If the company wants to raise the sales, should the company increase or reduce the price. Give justification to your answer on the basis of the price elasticity value.</p> <p>(iii) On the basis of income elasticity value state whether the demand will change more than proportionately or less than proportionately for a certain change in income. Give justification to your answer.</p> <p>(b) A firm faces the following demand function $P = 100 - 0.1Q$</p> <p>(i) Find the value of Price and Quantity when the price elasticity on the demand curve is 1.</p> <p>(ii) Find the value of Marginal Revenue (MR) when Total Revenue (TR) is maximum.</p> <p>(iii) What is the value of price elasticity when MR is positive and negative?</p> <p>(a) A product faces the following demand and supply function $Q = 2600 - 2P$ (Demand) $Q = 1400 + 4P$ (Supply)</p>	CO2, CO3

	<p>(i) Calculate price elasticity of demand at the price Rs.50. Is the product more elastic or less elastic? Can the price be increased for more sales?</p> <p>(ii) If the price increases to Rs.100 find price elasticity of demand. Can there be further increase in the price? Suggest on the basis of the elasticity values.</p> <p>(iii) If a GST of Rs.100 is imposed by the government, write the revised supply equation. Will the supply increase or decrease? Show this in terms of the supply curve.</p> <p>(b) You are spending your weekly income \$1000 on two bundles of goods X and Y. Price of good X (P_x) is \$10 per unit and that of good Y is \$20.</p> <p>(i) Write your budget constraint and draw your budget line.</p> <p>(ii) Your friends income is \$2000 per week. Prices of good X and good Y remaining the same, draw the budget line for your friend. For maximizing the utility your friend should be on the budget line or above the budget line.</p> <p>(iii) If the total utility function of your friend is $U = X^{0.5} Y^{0.5}$, what utility maximizing quantities he can buy with his income?</p>	
<p>Q.No:9</p>	<p>(a) An Auto manufacturing company faces the following production function in the short-run</p> $Q = 50L^2 - L^3$ <p>where Q = output L = units of labour</p> <p>(i) Find the labour units employed corresponding to the point of inflexion.</p> <p>(ii) Find the labour units employed at the point before which Marginal Product (MP_L) remains higher than the Average Product (AP_L).</p> <p>(iii) Find the labour units to be employed when MP_L is zero. What is the maximum output?</p> <p>(b) The fixed cost of a small firm is Rs.500000. The variable cost per unit is Rs.50 and the selling price per unit is Rs.100.</p> <p>(i) What is the contribution Margin per unit and profit-volume ration?</p> <p>(ii) Find the Quantity at which the firm is neither getting profit nor incurring loss. Also find the sales value at this point using profit-volume ratio.</p> <p>(iii) If currently the firm is producing 18000 units of output, find the margin of safety in percentage. Show the margin of safety with a proper diagram.</p> <p>(a) The demand function faced by a monopolist is</p> $P = 160 - 0.0025Q$ <p>and the cost function (C) is</p> $C = 15Q + 0.0025Q^2$ <p>(i) Find the profit maximizing price and the quantity of the monopolist.</p> <p>(ii) Check if the monopolist is earning profit.</p> <p>(iii) If the monopolist is earning profit, show it with the help of a figure.</p> <p>(b) The Average Variable Cost (AVC) function of a production unit at a certain level of output is</p> $AVC = 100 - 15Q + Q^2$ <p>The Average Fixed Cost (AFC) at this level of output is \$50.</p> <p>(i) Find the output at which the MC (Marginal Cost) is minimum.</p> <p>(ii) Find the output at which Average Cost (AC) is minimum.</p> <p>(iii) On the basis of the MC and AC values show the relation between MC and AC with the help of a correct figure.</p> <p>(a) A firm under perfect competition has the following Total Cost (TC) function</p> $TC = 36 + 10Q + 16Q^2$ <p>The unit price the firm gets in the market is Rs.80.</p>	<p>CO2, CO3, CO4</p>

	<p>(i) Find the Quantity at which the firm aims at maximizing the profit. (ii) Write the profit function of the firm and check the profit condition. (iii) Depict the profit/loss of the firm with a suitable diagram.</p> <p>(b) The production function of a firm is $Q = L^{.75}K^{.25}$ Q = output L = labour K = capital</p> <p>Given the wage (w) = Rs.150 per unit and the rent (r) = Rs.50 per unit. (i) Find whether the firm will use equal amounts of labour and capital at the producer's equilibrium point. (ii) If the firm's ISO COST line is $20000 = 150L + 50K$ What unit of labour and capital it uses? With the help of a figure show this equilibrium condition of the firm.</p>																													
<p><u>Q.No:10</u></p>	<p>(a) Your friend has decided to start a transportation business after his B.Tech. He needs to buy a lorry at the cost of Rs.4000000. The life of this lorry is 20 years. This will produce income of Rs.300000 each year for first 9 years. At the end of 10th year the estimated income is Rs.200000. For each of the remaining period of its life the lorry is expected to earn Rs.340000. The Minimum Attractive Rate of Return (MARR) of your friend is 14% compounded annually. You want to help your friend in deciding about the acceptance of this proposal by calculating the Net Present Value (NPV) of the proposal. (i) Calculate the NPV of this proposal. (ii) How do you explain the NPV you find? (iii) Will you advise your friend to accept this proposal?</p> <p>(b) Following particulars are available about a new automatic machine of the surgery department in a medical college.</p> <table border="1" data-bbox="309 1270 1171 1518"> <thead> <tr> <th>Particulars</th> <th>Amount (\$)</th> </tr> </thead> <tbody> <tr> <td>Initial Cost</td> <td>500000</td> </tr> <tr> <td>Annual O/M cost</td> <td>850</td> </tr> <tr> <td>Cost at the end of 12th year for technical update</td> <td>50000</td> </tr> <tr> <td>Annual income from the machine</td> <td>60000</td> </tr> <tr> <td>Salvage value of the machine</td> <td>40000</td> </tr> <tr> <td>Life of the machine (years)</td> <td>20</td> </tr> </tbody> </table> <p>(i) Write a cash flow diagram. (ii) Find the Annual Worth amount of costs and benefits separately at the MARR of 9% set by the medical college. (iii) Write your impression about purchasing this machine.</p> <p>(a) Sudarshan wants to start a small bakery. The Cash flows of his dream project are summerised in the following table.</p> <table border="1" data-bbox="309 1756 1244 1924"> <thead> <tr> <th>End of year</th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Cash flows (\$)</td> <td>-12750</td> <td>1500</td> <td>3000</td> <td>4500</td> <td>6000</td> <td>7500</td> </tr> </tbody> </table> <p>(i) Draw a cash flow diagram of the above cash flows. (ii) Find the internal rate of return of the proposal by Hit and Trial method (Use the Uniform Gradient Series Annual Equivalent Factor).</p>	Particulars	Amount (\$)	Initial Cost	500000	Annual O/M cost	850	Cost at the end of 12 th year for technical update	50000	Annual income from the machine	60000	Salvage value of the machine	40000	Life of the machine (years)	20	End of year	0	1	2	3	4	5	Cash flows (\$)	-12750	1500	3000	4500	6000	7500	<p>CO4, CO5, CO6</p>
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	<p>(iii) If Sudarshan calculates the Net Present Value (NPV) of this project proposal, at 13.75% compounded annually will it be positive or negative? Why?</p> <p>(b) A melting machine in a steel plant cost \$400000. The salvage value of the machine is 12.5% of the purchase cost. The machine will provide service for 8 years.</p> <p>(i) Prepare a depreciation schedule for the tax purposes (Annual depreciation and Book value) by Declining Balance method. Use a depreciation rate of _____ percentage.</p> <p>(ii) Is the salvage value of the machine maintained in the record?</p> <p>(a) The state government is planning to provide public access to a wild life sanctuary. For this the government has to create the required facilities with the help of the US government. The government will generate good amount of income from tourism if the project is implemented. The costs and benefits associated with this proposal are given in the following table</p> <table border="1" data-bbox="311 846 1244 1120"> <thead> <tr> <th>Particulars</th> <th>Amounts (\$)</th> </tr> </thead> <tbody> <tr> <td>● First cost</td> <td>2400000</td> </tr> <tr> <td>● Annual O/M cost</td> <td>160000</td> </tr> <tr> <td>● Annual income</td> <td>500000</td> </tr> <tr> <td>● Additional Income at the end 10th year because of increased tourism</td> <td>200000</td> </tr> <tr> <td>● Life (years)</td> <td>20</td> </tr> </tbody> </table> <p>(i) Calculate the Benefit Cost ratio (B/C ratio) by using the Annual Worth method at the interest rate 12% annual compounding.</p> <p>(ii) Will the government invest in this project? Why?</p> <p>(b) The cost of an equipment is Rs.300000. The salvage value of the asset at the end of 8 years is 10% of the purchase cost.</p> <p>(i) Calculate the net depreciation charge and book value of the asset at the end of each year by Sinking Fund Method. Use an interest rate of 12% compounded annually.</p> <p>(ii) Is the salvage value maintained in the record?</p>	Particulars	Amounts (\$)	● First cost	2400000	● Annual O/M cost	160000	● Annual income	500000	● Additional Income at the end 10 th year because of increased tourism	200000	● Life (years)	20	
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<p>Q.No:11</p>	<p>(a) Explain the Demand-Pull and Cost-Push inflation with suitable diagrams. Write your opinion on fuel inflation in India in the present scenario.</p> <p>(b) (i) Define GNP_{MP}. Find the value of GNP_{MP} from the following information. $GDP_{FC} = 5000$ crore $NFIA = 2000$ crore Depreciation = 50 crore $NIT = 100$ crore <i>NB: NFIA = Net Factor Income from Abroad</i> <i>NIT = Net Indirect Tax</i></p> <p>(ii) Define NDP_{FC}. Find NDP_{FC} given the following information. $NNP_{MP} = 7000$ crore $NFIA = 1000$ crore $NIT = 300$ crore Depreciation = 200 crore</p>	<p>CO4, CO5, CO6</p>												

NB: NFIA = Net Factor Income from Abroad
NIT = Net Indirect Tax

(a) As a monetary policy expert suggest and explain the important monetary measures to combat inflation.

(b) (i) Define GDP_{MP} . Find the value of GDP_{MP} from the following information.

$NNP_{FC} = 10000$ crore

$NFIA = 500$ crore

Depreciation = 500 crore

$NIT = 200$ crore

NB: NFIA = Net Factor Income from Abroad

NIT = Net Indirect Tax

(ii) What is National Income? Find the value of National Income given the following information.

$NDP_{MP} = 6000$ crore

$NFIA = 1500$ crore

$NIT = 200$ crore

Depreciation = 100 crore

NB: NFIA = Net Factor Income from Abroad

NIT = Net Indirect Tax

(a) Suggest and explain the important fiscal measures which can help the government for controlling inflation in an economy.

(b) (i) Define GDP_{MP} and calculate its value from the following data.

$GNP_{FC} = 9000$ crore

$NFIA = 4000$ crore

$NIT = 500$ crore

Depreciation = 200 crore

NB: NFIA = Net Factor Income from Abroad

NIT = Net Indirect Tax

(ii) Define GNP_{FC} and find its value from the following particulars.

$NDP_{MP} = 8000$ crore

$NFIA = 2000$ crore

$NIT = 500$ crore

Depreciation = 300 crore

NB: NFIA = Net Factor Income from Abroad

NIT = Net Indirect Tax