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

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

Subject Name & Code: **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)**

Question No	Question Type (MCQ/SAT)	Question	CO Mapping	Answer Key (For MCQ Questions only)
Q.No:1		Supply function remaining constant, if the demand curve shifts to the right then equilibrium price (i) increases (ii) decreases (iii) remains constant (iv) all the above	CO1	(i)
		If the supply function shifts to the left demand condition remaining unchanged then the Quantity will (i) increase (ii) fall (iii) remain same (iv) none of the above	CO1	(ii)
		The price remaining unchanged if the cost of production decreases, this will cause (i) a rightward shift of the supply curve (ii) a leftward shift of the supply curve (iii) a movement on the same supply curve (iv) none of the above	CO1	(i)
		Other factors remaining constant if the price of a product increases, this will cause (i) a rightward shift of the demand curve (ii) a leftward shift of the demand curve (iii) a movement along the demand curve (iv) none of the above	CO1	(iii)
Q.No:2		Shape of the indifference curve for two perfect substitute goods is (i) convex to the origin (ii) concave to the origin (iii) right angled (iv) a straight line	CO1	(iv)

		When the income of the consumer increases there is (i) a rightward shift of the budget line (ii) a leftward shift of the budget line (iii) no. Change in the budget line (iv) all of the above	CO1	(i)
		At the point of equilibrium the consumer purchases the combination of two goods and spends (i) all his money income (ii) less than his money income (iii) more than his money income (iv) none of the above	CO1	(i)
		At the point of consumer equilibrium (i) slope of indifference curve is greater than the slope of the budget line. (ii) slope of the budget line is more than the slope of the indifference curve. (iii) slope of the indifference curve is equal to the slope of the budget line. (iv) none of the above.	CO1	(iii)
Q.No:3		In law of variable proportion, corresponding to the point of inflexion we find (i) Total product (TP_L) to be maximum (ii) Average product (AP_L) to be maximum (iii) Marginal Product (MP_L) to be maximum (iv) all the above	CO1, CO2	(iii)
		The Cobb-Douglas production function $Q=300L^{0.7}K^{0.4}$ shows (i) Diminishing return to scale (ii) Increasing return to scale (iii) Constant return to scale (iv) none of the above	CO1, CO2	(ii)
		Given the production function $Q = 5\sqrt{LK}$ The return to scale the above production function shows is (i) Increasing return to scale (ii) Diminishing return to scale (iii) Constant return to scale (iv) None of the above	CO1, CO2	(iii)
		In a production system the inputs are increased by 70% and the output increases by 35%. This exhibits (i) Diminishing return to scale (ii) Increasing return to scale (iii) Constant return to scale (iv) None of the above	CO1, CO2	(i)
Q.No:4		The selling price of a produict is \$50 and Average variable cost is \$25. The profit.volume ratio is (i) 0.6 (60%) (ii) 0.05 (5%) (iii) 0.5 (50%)	CO1, CO2	(iii)

		(iv) 0.06 (6%)		
		The Total Variable Cost (TVC) function of a firm is $TVC = 100Q - 20Q^2 + Q^3$ The Marginal Cost function would be (i) $MC = 100 - 20Q + Q^2$ (ii) $MC = 100Q^2 - 20Q^3 + Q^4$ (iii) $MC = 100 - 40Q + 3Q^2$ (iv) $MC = 100Q - 20Q^2 + Q^3$	CO1, CO2	(iii)
		Given the Total Cost function as $C = 100 + 8Q + Q^2$ The Average Fixed Cost (AFC) and Marginal Cost (MC) for producing 10 units of output are (i) 10, 128 (ii) 10, 28 (iii) 10, 30 (iv) 18, 118	CO1, CO2	(ii)
		A firm is facing the following Total Variable Cost (TVC) function $TVC = 75Q - 10Q^2 + 0.5Q^3$ The output level at which Marginal Cost is minimum is (i) 6.66 (ii) 7.12 (iii) 6.99 (iv) 6.33	CO1, CO2	(i)
Q.No:5		You evaluated a project proposal at 13.75% by NPV criteria and got the NPV to be 10005. If you implement the proposal you will get (i) 13.75% return (ii) less than 13.75% return (iii) More than 13.75% return (iv) None of the above	CO1, CO2, CO3	(iii)
		A Company's Minimum Attractive Rate of Return (MARR) is 16 percent. The company has calculated the Internal Rate of Return (IRR) of a project to be 15.5 percent. Now the project should be (i) Rejected (ii) Accepted (iii) Accepted if the NPV is +ve (iv) None of the above	CO1, CO2, CO3	(i)
		The payback period of project A, B and C are 2.6 years, 3.5 years and 3 years respectively. If you have to select the most economical project on the basis of the pay back period then you will select (i) A (ii) A & B (iii) C (iv) B	CO1, CO2, CO3	(i)
		Internal Rate of Return of a project indicates (i) Minimum Attractive Rate of Return (MARR) of the investment (ii) Net Present Worth (NPW) of the investment.	CO1, CO2, CO3	(iii)

		(iii) Efficiency and quality of the investment (iv) All of the above		
Q.No:6		Rami will receive Rs.500000 at the end of 5th year from his account. Money is growing at 8% compounded annually. What sinking fund amount Rami has to deposit in his account for each year? (i) 86978.23 (ii) 85000.23 (iii) 85228.23 (iv) 86228.23	CO1, CO2, CO3	(iii)
		The effective rate of interest for 12 months if the nominal rate of interest is 1% per month and the compounding occurs monthly is (i) 12.01% (ii) 12.05% (iii) 12.5% (iv) 12.68%	CO1, CO2, CO3	(iv)
		You make a series of annual deposits into your bank account that gives 8% interest compounded annually. You deposit $5000 at the end of year 1 and thereafter your deposit amount decreases by $500 in each of the next four years. Total maturity money you would receive after the deposit periods is (i) 23916.748 (ii) 24916.748 (iii) 25916.748 (iv) 26916.748	CO1, CO2, CO3	(i)
		The manager of a manufacturing plant has to replace an alignment device at the end of 7 years from now. The manager expects that the new device will cost about $150000 at that time. How much money the manager should park in an account paying 10% interest per annum in order to replace the device at the end of 7 years? (i) 77973.72 (ii) 76973.72 (iii) 80910.72 (iv) 71900.72	CO1, CO2, CO3	(ii)
Q.No:7		The cost of a machine is $100000. The salvage value of the machine is $20000 at the end of its life of 10 years. You are calculating depreciation by straight line method. Total depreciation fund collected at the end of 7th year is (i) Rs.58000 (ii) Rs.56000 (iii) Rs,59000 (iv) none of the above	CO1, CO2, CO3	(ii)
		The cost of an equipment is $150000 with the salvage value of $50000 at the end of its life of 6 years. You are calculating depreciation by sum of years digit method. The annual depreciation amount at the end of 3rd year is	CO1, CO2, CO3	(iv)

		(i) 25047.619 (ii) 24047.619 (iii) 22047.619 (iv) 19047.619		
		The initial cost of an asset is Rs.400000 with a salvage value of Rs.40000 at the end of its life of 8 years. The depreciation rate (k) is 25 percent. The annual depreciation at the end of 5th year by Declining Balance method is (i) 31640.625 (ii) 32640.625 (iii) 33640.625 (iv) none of the above	CO1, CO2, CO3	(i)
		The initial cost of an asset is Rs.400000 with a salvage value of Rs.40000 at the end of its life of 8 years. You are calculating depreciation by Declining Balance method. If the depreciation rate (k) is 25%, the book value at the end of 6th year is (i) 70191.4064 (ii) 71191.4064 (iii) 72291.4064 (iv) none of the above	CO1, CO2, CO3	(ii)

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

Time: 1 Hour and 30 Minutes **(3×12=36 Marks)**

Question No	Question	CO Mapping (Each question should be from the same CO(s))
Q.No:8	(a) Cross Price elasticity between cars and price of petrol is -0.25 in India. A foreign company sells 20000 Lxi cars per month and 10000 Vxi cars per month in India. If the price of cars remains unchanged and the price of petrol increases by 100% what will be the effect on the number of cars sold per month? (b) Given the demand and supply functions D = 500 - 10P S = 300 + 10P (i) Find the equilibrium price and quantity. (ii) If government imposes an indirect tax of Rs.10 find the distribution of tax burden between the consumer and the seller.	CO2, CO3

	(a) During the Covid-19 times automobile industries in India decided to drop the price of cars by 20% to enhance the demand for cars. The price elasticity of demand for cars is -2.5 (more elastic). The cross price elasticity between cars and petrol price is -2.8 and petrol price increases by 20% due to corona crisis. Before these changes 200000 cars were sold per week. Assess the effect of these changes on the sales of cars. What would be the new sales? (b) Given the demand and supply functions for a product D = 1000 - 3P S = 400 + 2P (i) Find the equilibrium price and quantity. (ii) If a GST of Rs.20 is imposed by the government what would be its effect on the equilibrium price? (iii) Who is more elastic, the consumer or the seller? Why?	
	(a) Following demand function is given for a shoe company Q = 1000 - 4P + 0.5Y (Q=Quantity, P=Price of shoe, Y=per capita income) Currently P=Rs.200, Y=Rs.5000 (i) Find the income elasticity of demand. (ii) Will the demand for shoe increase more than proportionately if there is a 10% increase in income? How? (b) The demand function faced by a firm is $P = 7000 - 4Q$ (i) Find the Price and Quantity when Total Revenue (TR) is maximum. (ii) Calculate the price elasticity at the maximum point of TR using the above demand function.	
Q.No:9	(a) Wear and run shoe company manufactures shoe for exports. The shortrun production function faced by the company is $Q = 15L^2 - L^3$ (i) Find the labour (L) to be employed beyond which Average Product (AP_L) will decline. (ii) Find the labour (L) to be employed beyond which Marginal Product (MP_L) will be negative. (b) The Total Cost function faced by a firm is $C = 8000 + 10Q + 20Q^2 - Q^3$ (i) What is the output beyond which Marginal Cost (MC) will rise? (ii) Find the price below which the firm should shut down production.	CO2, CO3, CO4
	(a) The Average Production of Labour (AP_L) is given by the equation. $AP_L = 200 + 1000L - 10L^2$ (i) At what unit of Labour Marginal Production of Labour (MP_L) is maximum? (ii) Verify that AP_L is maximum at a labour unit that is higher than the labour unit where MP_L is maximum.	

(b) The demand function for a product is

$Q = 100 - 2P$

The Total Cost (C) of the firm is $C = 50 + 2Q$.

(i) Decide the profit maximizing price and output.

(ii) What amount of profit the firm is earning at the equilibrium output?

(a) A firm has the following short run production function where the only variable input is Labour(L). The output(Q) function is $Q=9L^2-0.5L^3$.

(i) Find the labour to be employed at the end of Stage-I.

(ii) Find the labour to be employed at the end of Stage-II.

(b) Given the Total Cost (TC) function of a firm as

$TC = 100 + 60Q - 12Q^2 + Q^3$

(i) Find the output level at which Average Variable Cost (AVC) is minimum.

(ii) Find the output level at which Marginal Cost(MC) is minimum.

(iii) Graphically show the relationship between AVC and MC on the basis of the results you get.

Q.No:10

CO4, CO5, CO6

(a) The initial investment on a project is Rs.10,00,000. The project will generate the following cash flows during its life period.

Year	1	3	5	7	9	11
Cash Flow ($)	250000	250000	250000	250000	250000	250000

The salvage value of the project is $50000. Find the Net Present value of the project if the Minimum Attractive Rate of Return is 14 percent compounded annually. Should the project be implemented?

(b) Financial details of two plans A and B for an Irrigation Project are summerised below.

Particulars	Plan A	Plan B
Initial cost	$450000	$300000
Annual O & M Cost	$5000	$10000
Cost at the end of 10^{th} year to maintain the smooth functioning	$90000	$100000
Salvage value	$80000	$90000

The life of both the projects is 20 years. The interest rate is 8% compounded annually. Do the annual worth analysis of the projects and select the plan you will accept.

(a) The details of an investment proposal are given below

Year	0	1	2	3	4	5
Cash flow ($)	-150000	45570	45570	45570	45570	45570

Calculate the Internal Rate of Return (IRR) of the project. If your personal MARR is 14%, should you go with the project?

(b) Break even production of a company is 20000 units. The Fixed

	cost is Rs.200000 and the Average Variable Cost is Rs.100. (i) Find the selling price of the company. (ii) How much the company should produce to earn a profit of Rs.100000?	
	(a) The cost of a machine is $400000. The machine can be used for 6 years. The Salvage value of the machine is 25% of the cost of the machine. Tabulate the net depreciation and book value of the machine for each year by sinking fund method. The interest rate is 12% compounded annually. (b) Government of Odisha is planning to invest Rs.50,00,00,000 in the ring road project around Bhubaneswar city for better communication facilities. Further, the government has to provide another financial support of Rs.10,00,00,000 at the end of 5^{th} year. The project will generate benefit of Rs.5,00,00,000 each year for 20 years first phase of life after which it needs resurfacing. Current rate of interest is 5% yearly compounding. Do a Benefit-cost ratio analysis on the project using present worth method. Should the government go ahead with the proposal?	
Q.No:11	(a) Explain the following monetary measures for controlling inflation (i) Bank Rate (BR) (ii) Cash Reserve Ratio (CRR) (b) (i) Given the following information NDP_{MP} = Rs.20000 NFIA = Rs.2000 Indirect Tax = Rs.1000 Subsidies = Rs.500 Find NNP_{FC}. (ii) Given the following information NNP_{FC} = Rs.10000 Depreciation = Rs.200 NFIA = Rs.600 NIT = Rs.100 Find GDP_{MP}. *NB:* *MP – at Market Price* *FC – at Factor Cost* *NFIA – Net Factor Income from Abroad* *NIT – Net Indirect Tax*	CO4, CO5, CO6
	(a) Explain the following fiscal measures to control inflation in an economy (i) Increase in Taxation (ii) Reduction in Public Expenditure (b) (i) Given the following information NNP_{MP} = Rs.5000 Depreciation = Rs.1000 NFIA = Rs.800 Indirect Tax less subsidies = Rs.200 Find GDP_{FC}.	

	(ii) Given the following information NDP_{MP} = Rs.600 Depreciation = Rs.200 NIT = Rs.50 Find GDP_{FC}. *NB:* *MP – at Market Price* *FC – at Factor Cost* *NFIA – Net Factor Income from Abroad* *NIT – Net Indirect Tax*	
	(a) Explain the following measures to check inflation. (i) Open Market Operation (OMO) (ii) Statutory Liquidity Ratio (SLR) (b) (i) Given the following information NNP_{FC} = Rs.500 Depreciation = Rs.100 NIT = Rs.50 Find GNP_{MP}. (ii) Given the following information GNP_{MP} = Rs.2000 Depreciation = Rs.400 NFIA = Rs.600 NIT = Rs.100 Find NDP_{FC}. *NB:* *MP – at Market Price* *FC – at Factor Cost* *NFIA – Net Factor Income from Abroad* *NIT – Net Indirect Tax*	

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