ॐ END SEMESTER EXAMINATION, JULY - 2023
Principles of Microeconomics (HSS1021)

Programme: B.Tech **Semester: 2nd**
Full Marks: 60 **Time: 3 Hours**

Subject/Course Learning Outcome	*Taxonomy Level	Ques. Nos.	Marks
CO-1: Be able to apply various economic concepts, principles, and models, to take rational economic decisions.	L3 & L4	1 & 2	12
CO-2: Be able to analyze how demand and supply determine the price and quantity, both in product and factor markets.	L3 & L4	3 & 4	12
CO-3: Be able to analyze the responsiveness of quantity demanded and quantity supplied of a commodity to change in various factor(s) influencing it, through demand and supply elasticity.	L3	5	6
CO-4: Be able to analyze the impact of various government policies such as price ceiling, price floor, and tax on the market outcome and its role in the provision of public good and correcting externalities.	L3	6 & 8(b) (c)	10
CO-5: Be able to apply the concept of consumer surplus and producer surplus to analyze how the allocation of resources through market mechanisms affects economic well-being.	L3 & L4	7,8(a) & 9	14
CO-6: Be able to analyze how profit maximizing price and output are determined under different market structures, considering revenue and cost conditions.	L3	10	6

***Bloom's taxonomy levels: Remembering (L1), Understanding (L2), Applying (L3), Analysing (L4), Evaluating (L5), Creating (L6)**

Answer all questions. Each question carries equal mark.

1.	(a)	Rajnandan has Rs. 500 left over this week and he wants to contribute to a charitable cause. With Rs. 50, Rajnandan can feed one homeless person one meal. With Rs. 100, he can provide shelter for one homeless person one night. What is the opportunity cost of Rajnandan using all his money to shelter homeless people?	2
	(b)	You like the movie "Adipurish" and want to visit the movie as many times as possible. The total satisfaction derived from watching movie is given in the following table.	2

No of times watch the Movie	1st	2nd	3rd	4th	5th	6th
Total Satisfaction	400	700	950	1170	1270	1300

If the cost of watching movie each time is Rs. 220/-, then How many times you will watch the Movie?

	(c)	Suppose the government increases tax on cigarettes. As a result the teenage smoking rate has reduced. Analyse the situation by stating the relevant basic principles of economics.	2

2.		India wants to produce 2 commodities, shoes & sandals. Utilizing 1000 labour hours available with it. Various alternatives of production of shoes & sandals are given in the following table.	

Production Alternatives	A	B	C	D	E
Shoes (No)	0	150	250	375	500
Sandals (No)	100	70	50	25	0

	(a)	Using the information given in the above table draw a production possibilities frontier (PPF)?	2
	(b)	Compute the opportunity cost per unit of production of shoes at each possibility given is the above table.	2
	(c)	Assuming that the labour increases from 1000 labour hours to 2000 labour hours. Analyse the situation with the help of the PPF.	2
3.		The quantity demanded and supplied for Tropicana Juice per day in Angul city is given in following table.	

Price (Rs)	0	20	40	60	80	100	120
Demand (No's)	240	200	160	120	80	40	0
Supply (No's)	0	40	80	120	160	200	240

	(a)	Draw the demand and supply graph and show the market equilibrium price and quantity.	2
	(b)	Graphically analyze the market situation if the actual price of Tropicana Juice is Rs.100/-. What will be the quantity demanded and supplied?	2
	(c)	Graphically analyze what will happen to the price and quantity demanded and supplied of Tropicana Juice, if the price of Real Juice decreases (the competitor of Tropicana Juice) and at the same time price of sugar increases.	2
4.		The supply and demand function for labour in the Cuttack city is given below: $Q_d^L = 160 - 2W$ and $Q_s^L = (-)20 + 4W$, Where Q^L_d= Quantity demanded of labour, Q^L_s= Quantity supplied of labour, and W = Wage rate.	
	(a)	Graphically represent the demand and supply functions of labour and Compute the Quantity demanded of labour, Quantity supplied, and Wage rate of labour in the Cuttack city.	2
	(b)	Graphically analyse the labour market situation if the actual wage rate of labour is Rs.20/. Determine its impact on the wage rate?	2
	(c)	A competitive firm sells its output for Rs.20 per unit. The marginal product of the 5th worker is 10 units of output per day and the marginal product of the 6th worker is 7 units of output per day. The firm pays its worker a wage of Rs. 150 per day. Find out how many workers the firm will employ?	2
5.	(a)	The demand for apple in a small town was 200kg, when the price was Rs. 20 per kg. It expanded to 250 kg when the price was reduced to Rs. 18 per kg. Using mid-point method calculate the price elasticity of demand for apples in the town?	2
	(b)	The cross price elasticity between frozen yogurt and ice-cream is estimated at 0.80. What does it imply about the relationship between frozen yogurt and ice-cream? If the price of frozen Yogurt increases by 10%, what will be its effect on the quantity demanded of Ice-cream.	2

	(c)	Draw the demand curve for the perfectly inelastic demand. If the price of the product increases by 50%, find out how much change in quantity demanded takes place?	2
6.		Suppose the market demand and supply function for Coffee per day in Hyderabad city is given as Q^d =150-5p and Q^s= (-) 70+5p, Where Q^d, Q^s and P refers to quantity demanded, quantity supplied and price (Rs.) respectively.	
	(a)	Compute the market equilibrium price, quantity of Coffee demanded and supplied when no tax is imposed.	2
	(b)	Suppose the Government imposes a goods and services tax (GST) of Rs.4 on per cup of Coffee, find out the price paid by the buyer (P_b), price received by the seller (P_s) and the quantity of Coffee demanded and supplied after imposition of tax.	2
	(c)	Compute the tax revenue collected by the Government and the dead weight loss (DWL).	2
7.		Suppose the market for almonds in a small closed economy is depicted by the following domestic demand and supply function, $Q^d = 420 - 2P$, $Q^s = (-) 30 + 3P$; where Q is the quantity and P is the price.	
	(a)	Using a well labeled demand and supply diagram compute the consumer's surplus, producer's surplus and total surplus at equilibrium.	2
	(b)	Barsha bought a mobile phone for Rs. 15,000 and received a consumer surplus of Rs. 2800. What was her willingness to pay? If she would have purchased the mobile phone at Rs. 12,500 during the annual clearance sale of the store what would have been her consumer surplus?	2
	(c)	The demand function for Orio Biscuits in Bhubaneswar market is given as $Q^d = 150 - 5P$. If market price for Orio Biscuit is Rs. 20 calculate the consumer surplus. When the price of Orio Biscuit falls to Rs. 10 per packet find out the consumer's surplus at the new market price.	2
8.	(a)	Assume a country can adopt any one tax system out of three as given in the following table. If the country decided to adopt progressive tax system from equity point of view, compute the amount of tax paid by the tax payers under different income levels.	2

Tax rate (%)	Income Level (Rs.)			
	7,50,000	12,00,000	15,00,000	20,00,000
Tax System A	10	15	20	25
Tax System B	15	15	15	15
Tax System C	15	12	10	8

	(b)	The market demand and supply functions for electronic toy in Nuapada market are given as $Q^D = 60 - 5P$ and $Q^S = (-)20 + 5P$, where Q^D & Q^S refer to number of electronic toys demanded and supplied respectively and P refers to price (Rs.) per electronic toy. In order to augment revenue, Government decided to impose sales tax of Rs. 2/- per toy on seller. Compute the dead weight loss arising out of this tax on seller.	2

	(d)	Government thinks of increasing the tax revenue by increasing the sales tax from Rs. 2 per toy to Rs. 6 per toy. Will government be able to achieve its objective of increasing tax revenue by increasing the tax on toys? For this, use the demand and supply functions of toys given in (b) above, i.e., $Q^D = 60 - 5P$ and $Q^S = (-)20 + 5P$, where Q^D & Q^S refer to number of electronic toys demanded and supplied and P refers to price (Rs.) per electronic toy.	2
9.		The domestic demand and supply of herbal tea in India are given as $Q^d = 16000 - 20P$ and $Q^s = 20P$ where Q^d, Q^s and P are the quantity demanded quantity supplied and price (Per kg) respectively.	
	(a)	Find out the domestic price of herbal tea (Per kg) and Calculate the quantity demanded, quantity supplied at this price.	2
	(b)	If the world price of herbal tea is Rs. 200 per kg. Find out the quantity of herbal tea imported by the country.	2
	(c)	Graphically analyze the welfare effects of free trade using the concepts of consumer surplus (CS), producer surplus (PS) and total surplus (TS).	2
10	(a)	The following details given relating to total number of labourers employed by Amool dairy cooperative and different amount of milk powder produced in a day. Compute Average Productivity of Labour (APL) at each day of production.	2

Day	Mon	Tue	Wed	Thu	Fri	Sat
Total number of laborers employed	1	2	3	4	5	6
Total kg of milk powder produced	200	350	450	500	530	540

	(b)	The following cost information is given relating to different levels of ball-pen produced by Reynolds. Compute Total Fixed Cost at each level of ball-pen produced by Reynolds.					2

Total number of ball-pen produced	1000	2000	3000	4000	5000
Total Cost (Rs)	2000	3000	4000	5000	6000
Total Variable Cost (Rs)	1500	2500	3500	4500	5500

	(c)	Celesty, an ice-cream producing company is able to produce 2000 cups of ice-cream by engaging 10 labourers in a day. If the wage rate per labour is Rs 1000/- in a day and the company has total fixed cost of Rs 5000 per day, then estimate the total cost of producing 2000 cup of ice-cream by Celesty.	2
		End of Questions	