ECO 101

NOTE:

1. **The assignment is of 30 Marks, which will be converted to 15 Marks.**
2. **Students can submit individually or as a group, consisting of a maximum of 5 students.**
3. **The deadline of the assignment is on 27th April, 12:00 pm. Students can submit online, if needed.**

1. The demand function for a product is Qd = 75 – 1.5P, and supply function is Qs = 30 + 3P, where quantity demanded is Qd, quantity supplied is Qs and per unit price is P.

a. (3 Marks) Calculate the Consumer surplus and producer surplus at the equilibrium point.
b. (3 Marks) Suppose the government imposes the specific sales tax at the rate of Rs. 6 per unit then what would be the consumer surplus after tax, producer surplus after tax and tax revenue. Illustrate the graph with proper labels.

1. (6 Marks) Kate's Katering provides catered meals, and the catered meals industry is perfectly competitive. The following information shows the costs of Kate's Katering. Copy the table and fill in the missing data.

Quantity	TC	MC	ATC	AVC
0	20	-	-	-
1		20		
2		10		
3		16		
4		20		
5		24		

2. Chicken meat is sold in a perfectly competitive industry where all the sellers are identical with identical cost curves. The market demand for chicken is given by Q = 6500 – 100P. There are 12 perfectly competitive sellers, each with a marginal cost of MC = 0.01q, where q is the individual firm's output.

a. (3 Marks) Solve for the market supply and find the market equilibrium price and quantity.
b. (3 Marks) The seller's marginal cost is given by MC = 0.01q. Given this information and your answer in part (a), what is the seller's profit maximizing level of output, and profit at this market equilibrium? Is this a short-run or long-run equilibrium?

3. In the Kingdom of the Isles and the Rivers, cars are frequently used as a mode of transportation. Those cars are either Fossil Fuel (FF) driven or Electric Vehicles (EV). Here are the demand and supply functions of FF:

$$Q_{FF}^{S} = 14 + 2P_{FF} + 0.25P_{EV}$$

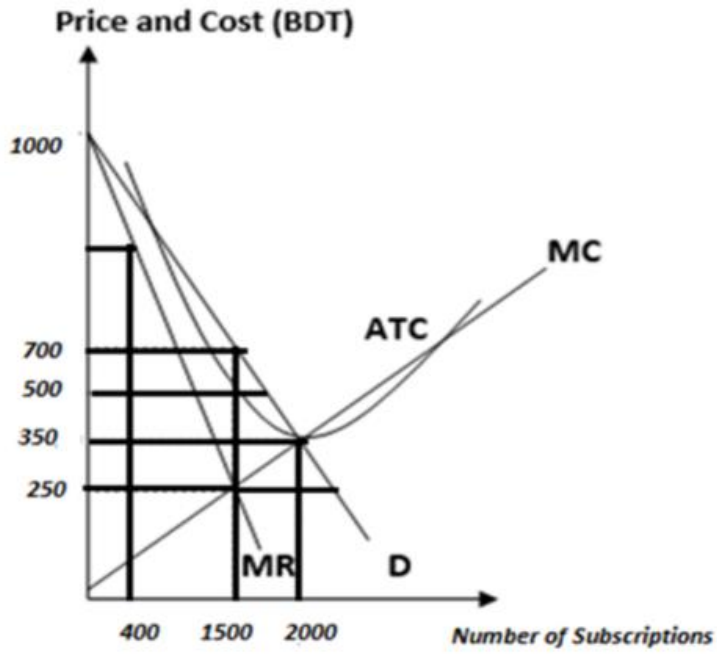
And $Q_{FF}^{D} = 3.752P_{EV} - 5P_{FF}$

Where P_{FF} = Price of Fossil Fuel; P_{EV} =Charging price of EV,

Q_{FF}^{D} = Quantity demand for Fossil Fuel, and Q_{FF}^{S} = Quantity Supply of Fossil Fuel.

a. (3 Marks) Assuming P_{EV} is $8 per unit, compute the market price and quantity of Fuel.
b. (3 Marks) If P_{EV} increases from $8 to $12, calculate the cross-price elasticity of demand (XED) between FF and EV. Also, determine the relationship between FF and EV based on the XED value.

4. The graph below shows the Market conditions of Rocky's Cable Service, which is the only broadband service provider in Bashundhara Residential Area. Use the graph to answer the following questions:



a. (2 Marks) To maximize profit, how many subscriptions are provided and how much does each user pay?

b. (2 Marks) If Rocky is forced to charge a perfectly competitive market price because of the increased number of service providers, what price will Rocky be charging now and how many subscriptions will be sold by him?
c. (2 Marks) Which of the outcomes is more efficient from a social point of view and why Explain.