August 2017: FI Assessment test for ECS2601

QUESTION 1 (4 marks)
Use the following information to answer question 1.1 and 1.2.

The demand for microeconomic books is: Qd = 120 - P
The supply of microeconomic books is: Qs = 5P

1.1 What is the equilibrium price of books?

Qd = Qs
120 – P = 5P
-P – 5P = -120
- 6P = -120
P = 20

1.2 What is the equilibrium quantity of books?

Q = 120 – 20
= 100

QUESTION 2 (15 marks)

2.1 The average monthly income of households in a certain town increases from R2 500 to R3 000. As a result, the quantity demanded of white bread rolls increases from 1 000 to 1 300 units per day, the quantity demanded of whole grain bread rolls decreases from 800 to 700 units per day and the quantity demanded of McDonald's (hamburgers) increases from 400 to 600 burgers per day.

2.1.1 Use the arc elasticity formula to calculate the income elasticity of demand for white bread rolls, whole grain bread rolls and McDonald's, respectively.

$$e_p = \frac{(Q_2 - Q_1)/[(Q_1 + Q_2)/2]}{(P_2 - P_1)/[(P_1 + P_2)/2]}$$

Ep (WBR) = (2500+3000/2)/ (1000+1300/2) x (1300-1000/3000-2500)
= 2750/1150 x 300/500
= 2.39 x 0.6
= 1.43

Ep (WGBR) = (2500+3000/2) / (800+700/2) x (800-700/3000-2500)
= 2750/750 x 100/500
= 3.67 x 0.2
= 0.7

Ep (McD)= (2500+3000/2) / (400+600/2) x (600-400/3000-2500)
= 2750/500 x 200/500
= 5.5 x 0.4
= 2.2

2.1.2 Classify each of these three products as normal or inferior. Explain your answers in each case.

White bread rolls – normal goods because with normal goods, as income increases quantity demanded also increases. Income increased from R2500- R3000 and Qd increased from 1000-1300

Whole grain bread rolls- inferior goods because with inferior goods. As income increases, quantity demanded decreases. When income increased to R3000, Quantity demanded of WGBR decreased from 800-700

McDonald burger - Normal good. As income increased to R3000, Qd increased from 400-600

2.1.3 Classify each of these three products as a necessity or a luxury. Explain your answer in each case.

White bread rolls- is a luxury good, demand increased as income increased and the income elasticity is greater than 1.

MacDonald burgers- luxury goods, demand also increased as income increased and its income elasticity is greater than 1.

Whole Grain Bread Rolls- necessity goods, demand did not increased with increase in income. Income elasticity of demand is less than 1.

QUESTION 3 (6 marks)

The following table presents Odwa's marginal utility for each good while exhausting his income. Calculate the Marginal Rate of Substitution.

Bundle	**Marginal Utility of Peanut Butter**	**Marginal Utility of Tuna**	**Marginal Rate of Substitution (MU_T/MU_{PB})**
A	0.25	2.41	**9.64**
B	0.31	1.50	**4.54**
C	0.42	0.84	**2.00**
D	0.66	0.33	**0.50**

If the price of tuna is twice the price of peanut butter, at what consumption bundle in the table is Odwa maximizing his level of satisfaction? **C is therefore equilibrium bundle because $MU_B/ P_B = MU_T/ P_T$**

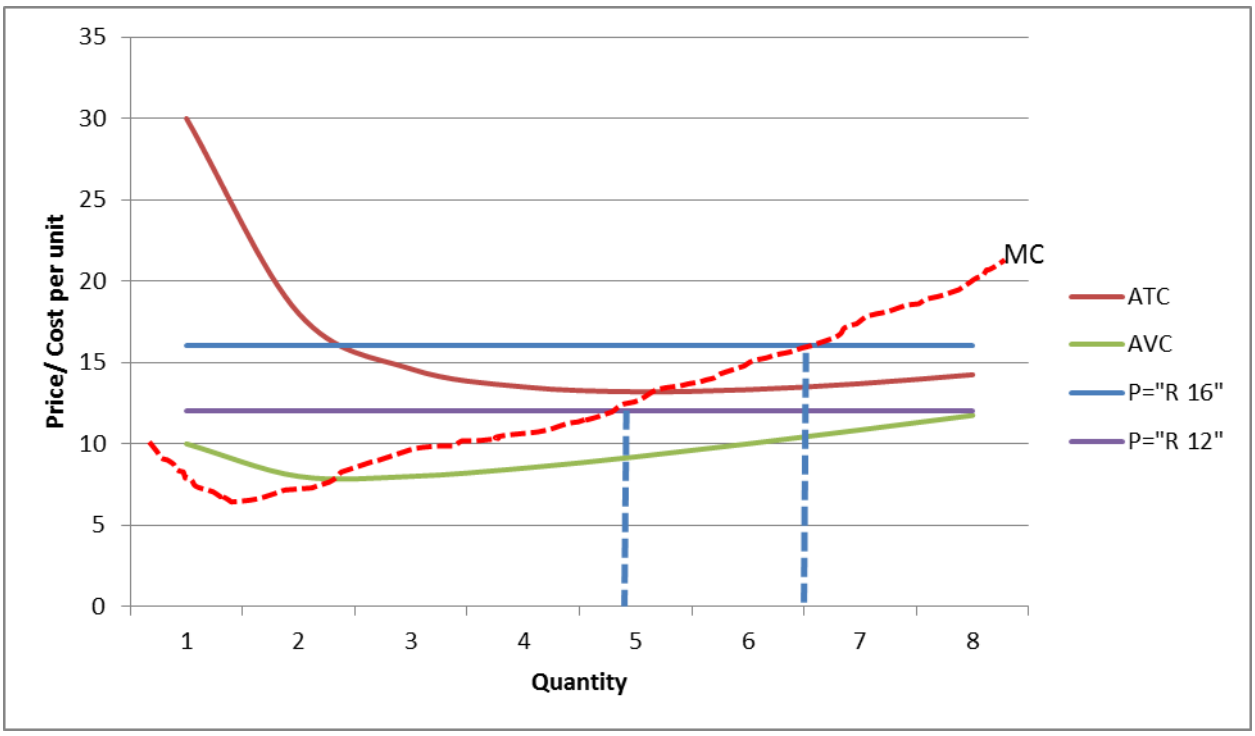
Equilibrium is when $MU_B/ P_B = MU_T/ P_T$	
A= 0.25/1 = 0.25	A= 2.41/2 = 1.21
B= 0.21/1 = 0.21	B= 1.5/2 = 0.75
C= 0.42/1 = 0.42	**C= 0.84/2 = 0.42**
D= 0.66/1 = 0.66	D= 0.33/2 = 0.17

QUESTION 4 (25 marks)

Consider the following table that shows the cost structure of a firm:

Units	TFC	TVC	TC	ATC	AVC	MC
0	20	0	20	-	-	
0,5						10
1	20	10	30	30	10	
1,5						6
2	20	16	36	18	8	
2,5						8
3	20	24	44	14,6	8	
3,5						10
4	20	34	54	13,5	8,5	
4,5						12
5	20	46	66	13,2	9,2	
5,5						14
6	20	60	80	13,33	10	
6,5						16
7	20	76	96	13,7	10,86	
7,5						18
8	20	94	114	14,25	11,75	

4.2 Use the set of axes below to complete the ATC, AVC and MC curves on the same set of axes. Ensure that you plot the MC values halfway between the whole values. For example, you would plot the MC value for the first unit halfway between 0 and 1.



4.3 If the market price were R16 per unit, draw the corresponding demand, AR and MR curves along with the MC and ATC curves. Then indicate the equilibrium quantity that this firm would produce, as well as the total profit that the firm makes. From the table, also calculate the total profit.

Equilibrium quantity is where P curve =MC curve which is between 6 and 7 units of output and the Profit = 16

Units	Price	TR= (Pxunits)	TC= given	Profit=TR-TC
1	16	16	30	-14
2	16	32	36	-4
3	16	48	44	4
4	16	64	54	10
5	16	80	66	14
6	**16**	**96**	**80**	**16**
7	**16**	**112**	**96**	**16**
8	16	128	114	14

4.4 What would happen if the market price decreases to R12 per unit?
Again, indicate the corresponding demand, AR and MR curves on the same diagram. Then indicate the equilibrium quantity that this firm would produce, as well as the total loss that the firm makes. Why does the firm continue producing in the short run**?**

Equilibrium quantity is where P curve=MC curve which is at 5 units of output and the Loss = -6

Units	Price	TR	TC	Profit
1	**12**	**12**	**30**	**-18**
2	**12**	**24**	**36**	**-12**
3	**12**	**36**	**44**	**-8**
4	**12**	**48**	**54**	**-6**
5	**12**	**60**	**66**	**-6**
6	**12**	**72**	**80**	**-8**
7	**12**	**84**	**96**	**-12**
8	**12**	**96**	**114**	**-18**

QUESTION 5

5.1 Does each firm have a dominant strategy? If so, explain what that strategy is.

Yes, the dominating strategy is when both firms decide to increase advertising.

5.2 What is the Nash Equilibrium? Explain where the Nash equilibrium occurs in the payoff matrix.

Nash equilibrium describes an equilibrium where each player' strategy is optimal given the strategies of other players. Nash equilibrium exists when there is no unilateral profit deviation from any of the players involved. That is, no player in the game would take a different action as long as every other player remains the same.