Assignment of the Module

Dear distance student this is your assignment of this module. Please, carefully read the module before doing the assignment. Try the assignment by yourself. You can ask others to understand. But you are not all wed to invite others to work you assignment. This will invalidate your work. Answer all questions on your own answer sheet. After the end of the term. The assignment will be collected through distance coordinator prepare your assignment before the submission date as possible. Have a nice time.

Questions:

1. Why does the quantity of salt demanded tend to be unresponsive to changes in its price?

The quantity of salt demanded tend to be unresponsive to changes in its price because, although salt is a necessity, its consumption will not be affected due to change in its price. People won't consume more of salt if its price drops down. The salt is a type of necessity good for the consumers. So, it is unresponsive to any change in the price of the salt. If the price of salt falls, even though the quantity demanded remains the same. The change in the price doesn't affect the quantity demanded because consumers have to consume some amount of salt at any price. The quantity of salt demanded tend to be unresponsive to changes in its price because, although salt is a necessity, its consumption will not be affected due to change in its price. People won't consume more of salt if its price drops down.

2. Why is the quantity of education demanded in private universities much more responsive than salt is to changes in price?

The quantity demanded for education much more responsive to any change in its price than salt. If the price of education increases in the private universities then as a result the quantity demanded for education from the private universities falls. Education from the private universities is not a necessity good, that's why it is much more responsive than salt.

3. To get the market demand curve for a product, why do we add individual demand curves horizontally rather than vertically?
4. The market for lemon has 10 potential consumers, each having an individual demand curve $p=101-10Q_i$ where p is price in dollars per cup and Q_i is the number of cups demanded pre week by the i^{th} consumer. Find the market demand curve using algebra. Draw an individual demand curve and the market demand curve. What is the quantity demanded by each consumer and the market as a whole when lemon is priced at p=$1/cup?
5. The demand for tickets to an Ethiopian Compared film is given by D (p) =200,000-10,000p, where p is the price of tickets. If the price of tickets is 12 birr, calculate price elasticity of demand for tickets and draw the demand curve.

Given;-

- D(p))=200,000-10,000p,
- $\frac{\Delta D}{\Delta P} = \frac{Change \in demand}{Change \in price} = -10000$

- ❖ At 12 Brr price $Change \in demand$ unit will be
- D (p)=200,000-10,000p,
- D (p)=200,000-10,000 *12
- D (p)=200,000-120,000
- D (p)=80,0000 Units

Then At 12 Brr price Change in demand unit was 80,0000 units

To calculate price elasticity of demand for tickets

Elasticity of demand for tickets $= \frac{\%\Delta D}{\%\Delta P} = \frac{\%Change \in demand}{\%Change \in price\, Unit}$ BUT

Change in demand (ΔD) $= \frac{Q_1+Q_0}{Q_0}$ ***100**

Change in price Unit (ΔP) = $\frac{P_1+P_0}{P_0}$ *** 100 THEN**

- **Elasticity of demand for tickets =** $\frac{\frac{Q_1+Q_0}{Q_0}*100}{\frac{P_1+P_0}{P_0}*100}$
- **Elasticity of demand for tickets =** $\frac{Q_1+Q_0}{\square}*100$ ***** $\frac{P_0}{P_1+P_0}*100$
- **Elasticity of demand for tickets =** $\frac{(Q¿¿1+Q_0)}{\square}\frac{P_0}{Q_0(P_1+P_0)}¿$
- **Elasticity of demand for tickets =** $\frac{\Delta Q}{\Delta P}$ ***** $\frac{P_0}{Q_0}$
- **Elasticity of demand for tickets = -10,000** $*\frac{12}{80,000}$
- **Elasticity of demand for tickets =** $\frac{-120.000}{80,000}$
- **Elasticity of demand for tickets = - 1.5**

6. Consider the following information for a particular economy.
   Total population =60 million Number of employed=30 million

Total labor force =40 million Natural rate of unemployment =12%

A. Find the total unemployment rate

B. Calculate the cyclical unemployment rate

Given :-

- Total population =60 million
- Number of employed=30 million
- Total labor force =40 million
- Natural rate of unemployment =12%

A. Find the total unemployment rate?

Solution For

Unemployment rate = $\frac{Number\ of\ Unemployed\ Person}{Total\ labor\ force}$,

But

N*umber of Unemployed Person* $= labor\ force - Number\ of\ employed$

- **N***umber of Unemployed Person* $= 49\ Million - 30\ Million$
- **N***umber of Unemployed Person* $= 10\ Million$

Unemployment rate = $\frac{Number\ of\ Unemployed\ Person}{Total\ labor\ force}$

- **Unemployment rate =** $\frac{10}{40}$
- **Unemployment rate = 25%**

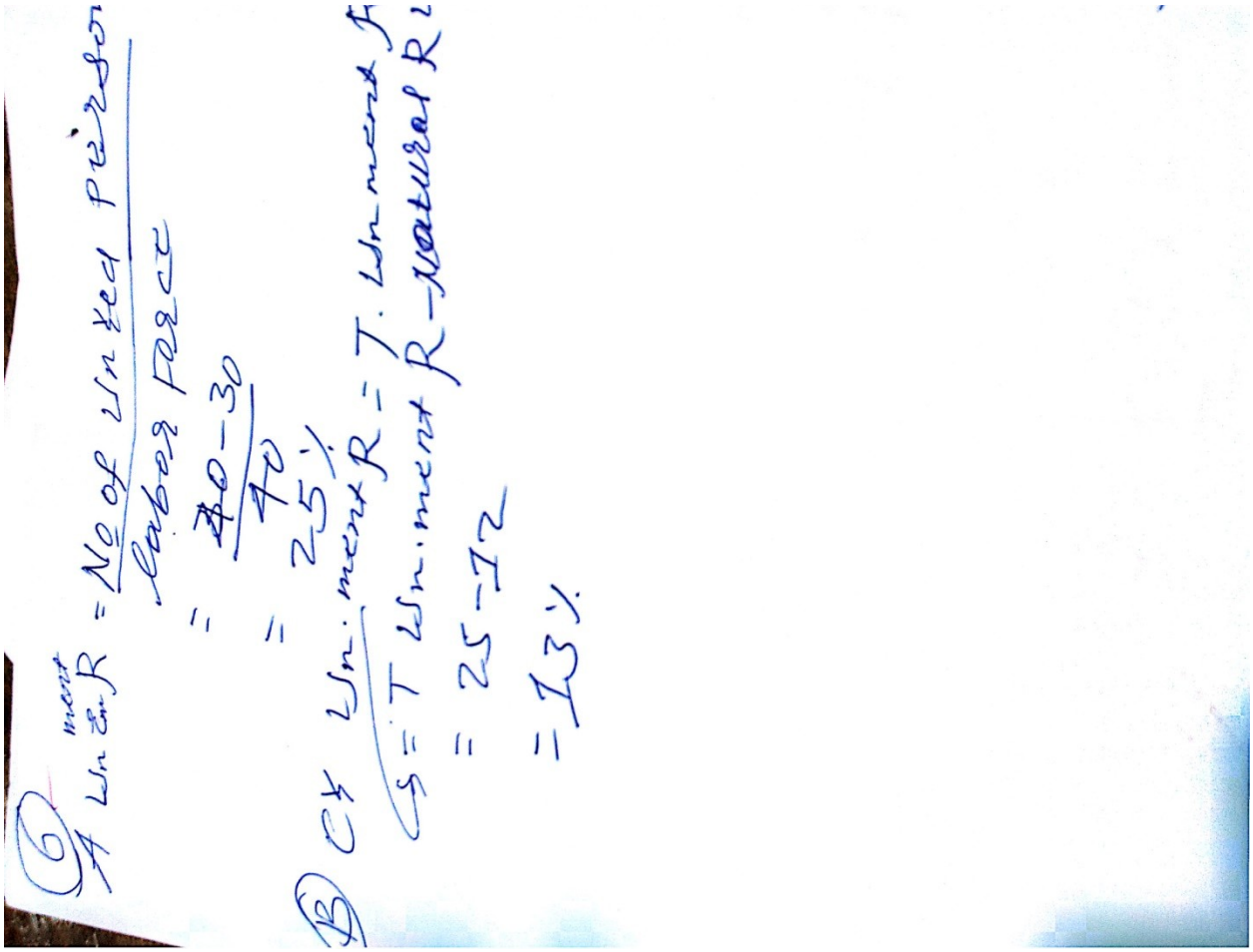
B. Calculate the cyclical unemployment rate?

Given :-

- Total population =60 million
- Number of employed=30 million
- Total labor force =40 million
- Natural rate of unemployment =12%
- **Unemployment rate = 25%**

Cyclical unemployment rate = Unemployment rate - Natural rate of unemployment

- **Cyclical unemployment rate = 25% - 12%**
- **Cyclical unemployment rate = 13%**



7. Consider an economy that produces and consumes **Bread** and **Automobile.** Date for two different years 2005 and 2010 is given in the following table.

Year	2005	2010
Price of Automobiles	$ 5000	$ 6000
Price of a loaf of bead	$ 10	$ 20
Number of automobiles produce	100	120
Number of loaves of bread produced	500,000	400,000

Using the year 2005 as a base year,

a. Calculate the nominal and real GDP of 2010.

Solution

The nominal and real GDP of 2010

- Y_{210} **=6000*120 +20*400000**
- Y_{210}**=8720000**

The real GDP of 2010

- Y_{210} **= 5000*129 +10* 400000**

- Y_{210}**= 4600000**

b. Find the value of GDP Deflator for the 2010 and interpret

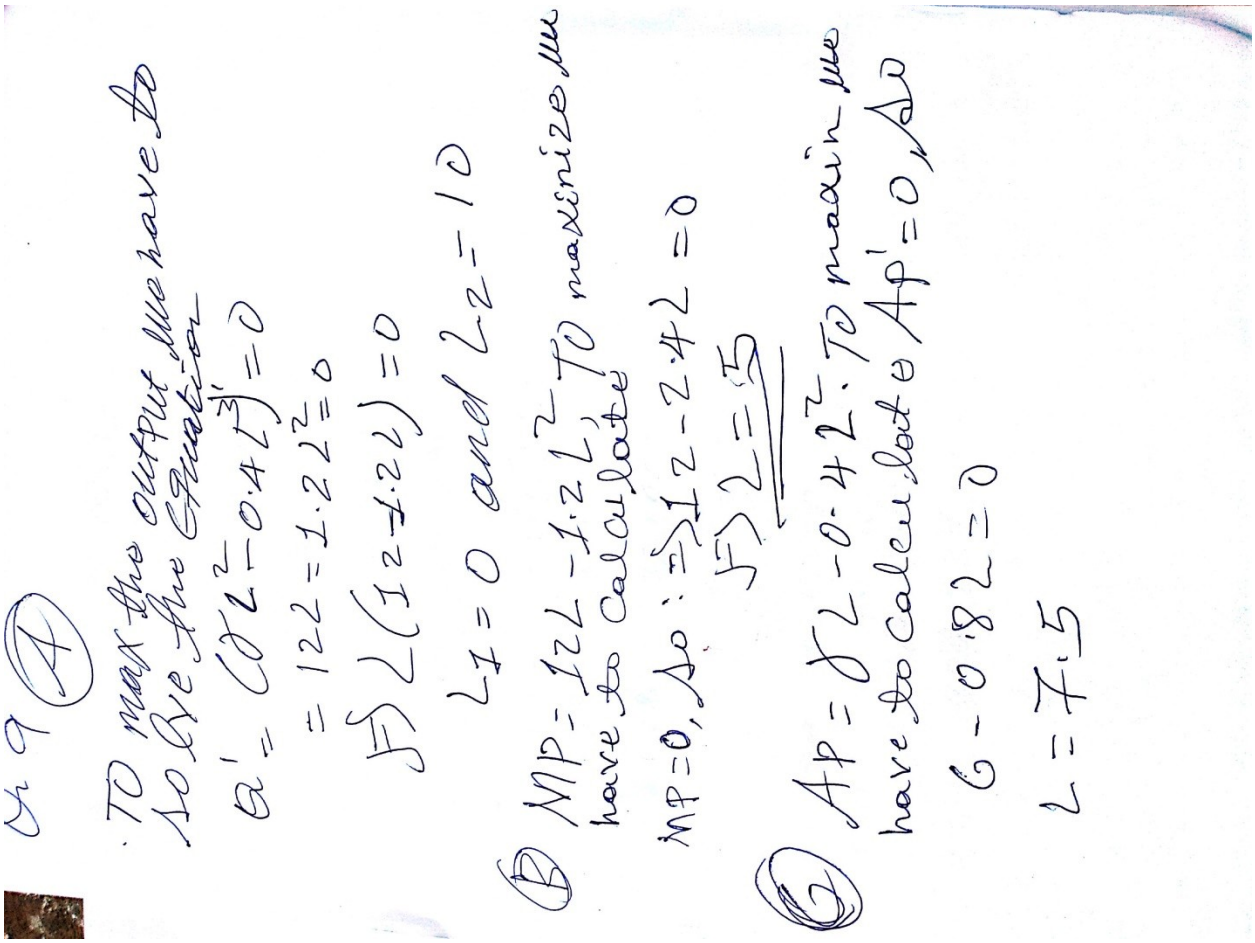
The value of GDP Deflator for the 2010

- **Deflator =** $\frac{8720000}{10*400000}$
- **Deflator = 189.56**
- **So, the real GDP of is almost twice lower than the nominal GDP**

C. Calculate the inflation rate in 2010.

- **The inflation rate in 2010 comparing to 2005 was 189.56 – 100 = 89.55**

8. Suppose the production function is given by $Q(L,K)=L^4K^4$. Assuming capital is fixed, find AP_L and $MPL_.$
9. Consider the following short run production:
   $Q=6L^2-0.4L^3$
   a. Find the value of L that maximizes output
   b. Find the value of L that maximizes marginal product
   c. Find the value of L that maximizes average product



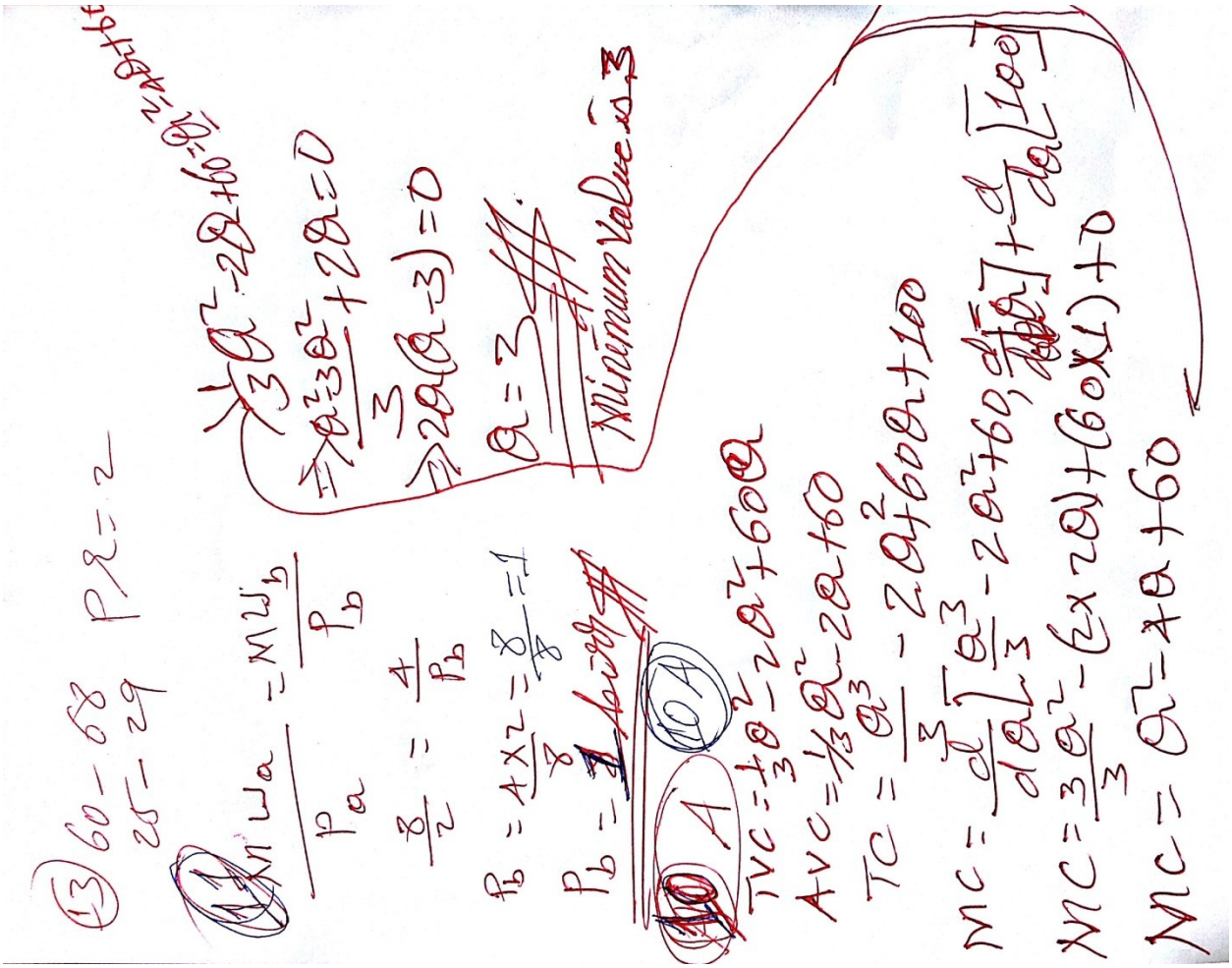
10. Give a short run cost function as TC=$^{1//3}$ Q^3-$2Q^2$ +60Q+100, find the minimum value of AVC and MC.

Given:-

FC=100

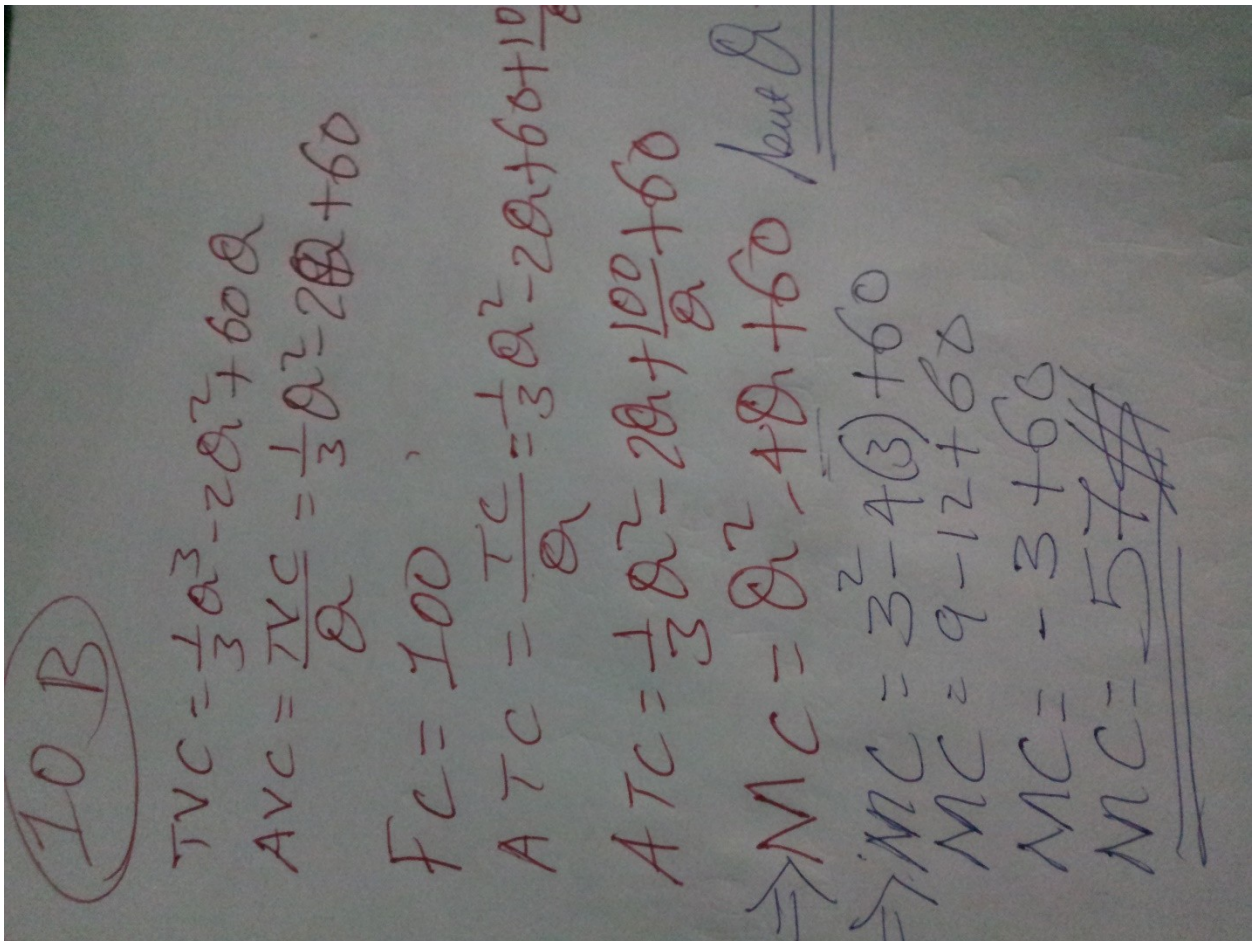
TVC= $^{1//3}$ Q^3-$2Q^2$ +60Q

$AVC_{¿}\frac{TVC}{Q}$



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11. A rational consumer spends all of her income on two goods: Apple and Banana. Suppose the last dollar spent on Apple increased her total utility from 60 utils to 68 utils and the last dollar spent on Banana increased her total utility from 25 utils to 29 utils. If the price of a unit of Apple is 2 Birr, what is the price of a unit of Banana at equlilbrium?

$$\frac{MU_a}{P_a} = \frac{MU_b}{P_b}$$

- $= \frac{8_a}{2_a} = \frac{4}{P_a}$
- $p_{b=¿\frac{8}{8}¿}$ **= 1 Brr**

❖ **1 Brr is the price of a unit of Banana at equilibrium.**

12. Give utility function U= where P_X =12 Birr, Birr, P_Y=4 Birr and the income of the consumer is, M =240 Birr
    a. Find the utility maximizing combinations of X and Y.
    b. Calculate marginal rate of substitution of X for Y ($MRS_{X,Y}$)at equilibrium and interpret your result.

answer

- $MUy = \frac{y\,0.5}{2X\,0.5}$
- $MUx = \frac{X^{0.5}}{2Y^{0.5}}$

12* x+4*y=240

3x+y=60

$$\frac{MUx}{Px} = \frac{MUy}{Py}$$

Y= 3X

x=10, y=30

c. **Calculate marginal rate of substitution of X for Y (MRSX,Y)at equilibrium and interpret your result.**

$$\mathbf{MRS_{X,Y}} = \frac{MUx}{MUy}$$

$$\mathbf{MRS_{X,Y}} = \frac{Y}{X}$$

$$\mathbf{MRSX,Y} = \frac{30}{10}$$

$$\mathbf{MRS_{X,Y} = 3}$$

13. What are the similarities and differences between oligopoly and monopolistically competitive market structure?

There are two intermediary market structures:-

- Monopolistic competitive market structure and
- Oligopoly competitive market structure.

MONOPOLISTIC COMPETITIVE MARKET STRUCTURE is a market structure characterized by a differentiated product and freedom of entry and exit. Monopolistically Competitive firms have one characteristic that is like a monopoly (a differentiated product provides market power), and one characteristic that is like a competitive firm (freedom of entry and exit). This form of market structure is common in market-based economies, and a trip to the grocery store reveals large numbers of differentiated products: toothpaste, laundry soap, breakfast cereal, and so on. Under monopolistic competition many sellers offer differentiated products. Products that differ slightly but serve similar purposes by making consumers aware of product differences, sellers exert some control over price. In an oligopoly, a few sellers supply a sizable portion of products in the market. They exert some control over price, but because their products are similar, when one company lowers prices, the others follow.

OLIGOPOLY COMPETITIVE MARKET STRUCTURE is a market structure characterized by barriers to entry and a few firms. Oligopoly is a fascinating

market structure due to interaction and interdependency between oligopolistic firms.

- N.B. *Since monopolistic competition and oligopoly are intermediary market structures*

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CHARACTERISTICS	**OLIGOPOLY COMPETITIVE**	**MONOPOLISTIC COMPETITIVE**
Number of firms	Many	Few
Type of product	Differentiated	Homogeneous(differentiated)
Control over price	Some, but within rather narrow limit	Limited by mutual interdependence and collusion
Condition of entry	Relatively easy	Considerable barriers
Examples	Clothes, shoes	Steel, Automobiles

14. A firm operates in a perfectly competitive market. The market price of its product is 4 birr and the total cost function is given by $TC=^{1}-Q^{3}-5Q^{2}+20Q+50$, where TC is the total cost and Q is the level of output.

a) What level of output should the firm produce to maximize its profit?
b) Determine the level of profit at Equilibrium?
c) What minimum price is required by the Firm to stay in the market?

(4) The firm produce at P = MC t
maximize the profit

$MC = Q^2 - 10Q + 20$

$Q^2 = 10Q + 16 - 4$

$Q_1 = 7$ and $Q_2 = 2$ units

(B) 14

$TR = 4 \times 8 = 32$

$TC = \frac{1}{3} \times 8^3 - 5 \times 8^2 + 20 \times 8$

$TC = 60.67$

$TP = TR - TC = 4 \times 8 - \left(\frac{1}{3} \times 8^3 - 5 \times 8^2 + 20 \times 8\right)$

$TP = -5 \times 8^2 + 20 \times 8 + 50$

$TP = -28.67$

The Profit at $Q = 2$ unit is lower so it is not profit maximizing quantity

(C) The minimum price is zero required by the firm

$P = AVC = \frac{VC}{Q} = \frac{1}{3} \times 8^2 - 5 \times 8 + 20$

$P = 1.33$ ##

(B) 14

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