

* Math:- Given the consumption function,

$C = 150 + 0.6Y$, where C = consumption expenditure,

Y = Income and investment (I) = 2000 TK.

Now, calculate : ① Equilibrium level of national income (Y).

② Consumption and saving

③ Show that saving is equal to investment.

Solution:

Given,

Consumption function, $C = 150 + 0.6Y$

Investment, (I) = 2000 TK.

Calculation of equilibrium national income (Y):

In a simple Keynesian model, equilibrium is where,

$$Y = C + I$$

$$\Rightarrow Y = 150 + 0.6Y + 2000 \quad [\text{substitute the values}]$$

$$\Rightarrow Y - 0.6Y = 2150$$

$$\Rightarrow 0.4Y = 2150 \Rightarrow Y = \frac{2150}{0.4}$$

$$\therefore Y = 5375 = \text{National income.}$$

Calculation of consumption and savings:

Now, we know,

equilibrium income is 5375 Taka.

$$\text{So, Consumption (c)} = 150 + 0.6Y$$
$$= 150 + (0.6 \times 5375)$$
$$= 3375$$

$$\text{So, Savings (s)} = Y - c$$
$$= 5375 - 3375$$
$$= 2000$$

Now, it's proved that, savings (s) is equal to investment (I).

We have already found,

$$\rightarrow \text{Equilibrium income (Y)} = 5375 \text{ TK.}$$

$$\rightarrow \text{Consumption (c)} = 3375 \text{ TK.}$$

$$\rightarrow \text{Savings (s)} = 2000 \text{ TK.}$$

$$\text{Therefore, } s = 2000 = I$$

At the equilibrium level of income, savings equals to investment.

Math ②

Suppose, you are a student of QS13 dept. You have been assigned the task of studying the relationship between demand and supply of rice production. Although very little research has been done to the specific day on the market. Your friends have performed an exclusive interviews with various market participants and have determined the following equations of demand and supply of rice production.

$$Q_s = 128 + 8P \quad \text{--- (i)}$$

$$Q_d = 478 - 6P \quad \text{--- (ii)}$$

Required variables, Q_s = Quantity of supply.

Q_d = n. n. demand

P = Price of specific rice production.

Now calculate, ① Equilibrium price of rice

② Equilibrium quantity.

- Solution :-

Suppose, In case of equilibrium,

$$Q_d = Q_s$$

$$\Rightarrow 478 - 6P = 128 + 8P$$

$$\Rightarrow -6P - 8P = 128 - 478$$

$$\Rightarrow -14P = -350$$

$$\Rightarrow P = \frac{-350}{-14}$$

$\therefore P = 25 = \bar{P}$, it's the equilibrium price.

Substituting the value of price in both equations,

$$Q_d = 478 - 6P$$

$$= 478 - (6 \times 25)$$

$$= 328$$

$$Q_s = 128 + 8P$$

$$= 128 + (8 \times 25)$$

$$= 328$$

So, $Q_d = Q_s = 328$, This indicates the equilibrium amount.

Ans: Equilibrium price is 25 Tk.

Equilibrium quantity is 328.

Math ③

In an Islamic perfect competition market, Total cost (TC) is given, $TC = Q^3 - 45Q^2 + 1000Q + 800$, where, Q = Quantity of goods, price = 1000 Taka calculate,

- ① The amount of total revenue (TR).
- ② Total profit (π) and show that this profit is in maximum Level.

Given, Solution

In an Islamic perfect competition market,

$$\text{Total cost (TC)} = Q^3 - 45Q^2 + 1000Q + 800$$

and price = 1000 TK.

$$TR = ?$$

$$\pi = ?$$

We know, $TR = PQ$

$$= 1000 \times Q = 1000 Q$$

We also know,

$$MR = \frac{\Delta TR}{\Delta Q} = 1000 \quad [1000Q = 1000 \times 1 \times Q^{1-1}]$$

We have, $TC = Q^3 - 45Q^2 + 1000Q + 800$

$$\begin{aligned} \therefore MC &= \frac{\Delta TC}{\Delta Q} = 3Q^2 - 90Q + 1000 + 0 \\ &= 3Q^2 - 90Q + 1000 \end{aligned}$$

To get the value of Q ,

We have to equal, $MR = MC$

$$\Rightarrow 1000 = 3Q^2 - 90Q + 1000$$

$$\Rightarrow 3Q^2 - 90Q = 1000 - 1000$$

$$\Rightarrow 3Q^2 - 90Q = 0$$

$$\Rightarrow 3Q(Q - 30) = 0$$

$$\Rightarrow Q - 30 = 0$$

$$\Rightarrow Q = 30$$

$$\text{or, } 3Q = 0$$

$$Q = 0$$

For profit maximizing there are two condition must be fulfilled

i) $MR = MC$

ii) slope of $MR <$ slope of MC .

∴ $Q = 30$

So, substituting the value of Q in TR and TC

equation,

$$\begin{aligned} TR &= 1000Q \\ &= 1000 \times 30 \\ &= 30,000 \end{aligned}$$

$$\begin{aligned} TC &= Q^3 - 45Q^2 + 1000Q + 800 \\ &= (30)^3 - \{45(30)^2\} + (1000 \times 30) + 800 \\ &= 17300 \end{aligned}$$

$$\pi = TR - TC$$

$$= 30,000 - 17300$$

$$= 12700, \text{ total profit}$$

Experiment: we know, $TR = 1000Q$

$$MR = \frac{\Delta TR}{\Delta Q} = 1000$$

Slope of $MR = 0$

$$TC = Q^3 - 45Q^2 + 1000Q + 800$$

$$\frac{\Delta TC}{\Delta Q} = MC = 3Q^2 - 90Q + 1000$$

$$\text{Slope of } MC = 6Q - 90$$

Slope of MR < slope of MC

$$0 < 6Q - 90$$

$$0 < (6 \times 30) - 90$$

$$0 < 180 - 90$$

$$0 < 90$$

It's proved that, Slope of MR < slope of MC.

Question ①

* What are the anti-social phenomenon of the monopoly market? What policies would you suggest to solve the problem?

Answer :

In a monopoly market, a single firm controls the market.

Anti-Social phenomena of monopoly market :-

① Higher prices: - Monopolists set higher prices, this leads to a loss of consumer's surplus.

② Restricted output: Monopolists produce less than socially optimal levels, it harms consumers.

③ Inefficiency: Lack of competition leads to allocative and productive inefficiency.

④ Lack of innovation or poor quality:

Without rivals, monopolists may not improve products and services.

⑤ Income inequality:

Monopoly profits often concentrate wealth.

⑥ Rent seeking:

Firms may use power to influence policies for personal gain.

■ Suggested policies:-

① Antitrust Laws: - Enforce laws to break up monopolies or prevent mergers.

→ US Sherman Antitrust Act.

② Price regulations-

To control excessive pricing.

③ Encouraging competition:

By reducing entry barriers.

④ Public ownership: In some cases, essential services can be provided by public enterprises.

⑤ Profit taxation: Imposing monopoly profit taxes to reduce excessive profit-taking.

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Question ②

* What are the anti-social phenomena of perfect competitive market? Recommend some Islamic policies to eliminate anti-social phenomena of Perfect competitive market.

— : Answers —

Even in a perfect competitive market some anti-social phenomena/effects may arise: -

① Exploitation of labor:

Firms may very low wages to minimize costs.

② Environmental harm:

To stay competitive firms might ignore environmental harm standards.

③ Lack of ethical consideration:

Focus on profit may lead to dishonesty or adulteration.

④ Neglect of social welfare:

No incentive for firms to invest in

public goods or charity.

④ Price wars:

Excessive competition can lead to instability and ruin small business.

** Islamic policies to eliminate anti-social phenomena of perfect competitive market: —

① Zakat system:

Redistributes wealth and supports the poor, reducing inequality.

② Fair wage policy:

Islam ensures just payment (Haqq-al-Ajeer) for labor.

③ Environmental Responsibility: —

Islam forbids harm to nature (faa'ad fil-aard).

④ Honesty in trade:

Islam prohibits fraud and promotes truthful transactions.

⑤ Promotion of brotherhood: —

Encourages mutual support, avoiding destructive competition.