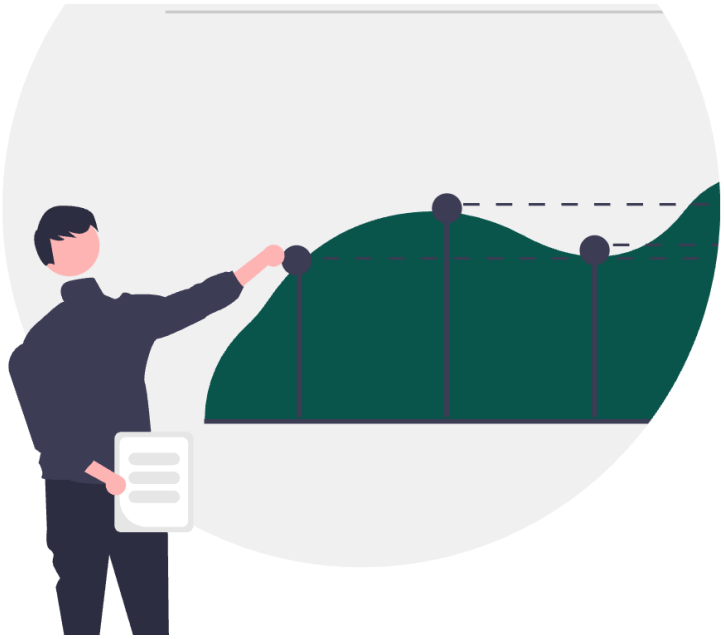
Assignment of Introduction to Macroeconomics

Assignment - 04



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Answer to the Question no 1

Aggregate Demand (AD)

Aggregate Demand (AD) is the total planned expenditure on domestically produced final goods and services at different price levels in an economy.

It is given by:

$$\mathbf{AD = C + I + G + (X - M)}$$

where,
C = consumption
I = investment
G = government expenditure
X – M = net exports

The **AD curve slopes downward** because of:

- interest rate effect
- wealth effect
- exchange rate effect

Aggregate Supply (AS)

Aggregate Supply (AS) shows the total quantity of goods and services that firms are willing to produce at different price levels.

Its shape depends on the time period:

- Short Run AS (SRAS): upward sloping
- Long Run AS (LRAS): vertical at potential output

Required explanations (one by one)

1. Leftward shift of Aggregate Demand (AD)

   A leftward shift of AD means total demand falls at every price level.

One reason

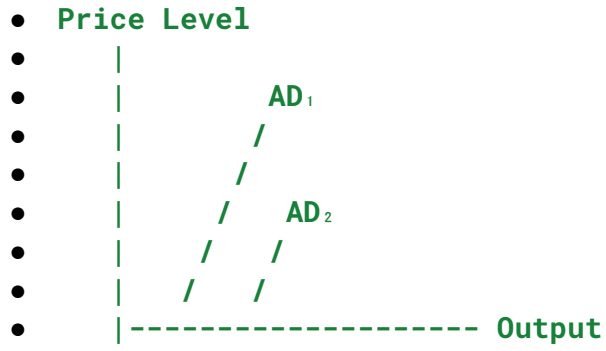
Decrease in government spending (G)

If government reduces expenditure:

- AD falls directly
- income and consumption fall
- overall demand decreases

So AD shifts leftward from AD_1 to AD_2.

Diagram: Leftward shift of AD



2. Rightward shift of Aggregate Supply (AS)

   A rightward shift of AS means firms can produce more output at the same price level.

One reason

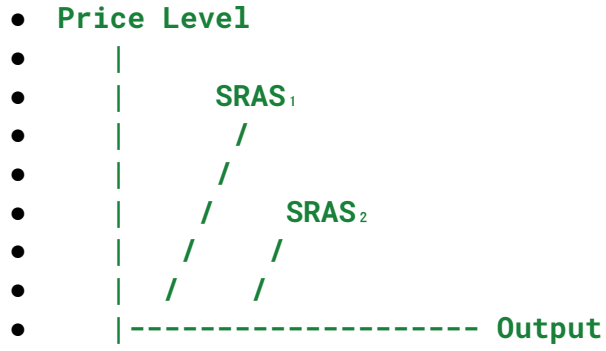
Improvement in technology

Better technology:

- raises productivity
- reduces cost of production
- increases output

Hence SRAS shifts rightward.

Diagram: Rightward shift of AS



3. Movement along the Aggregate Demand curve

A movement along AD happens when price level changes, while all other factors remain constant.

Example cause

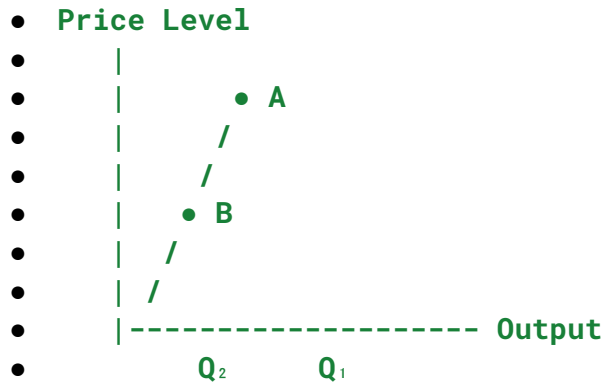
Increase in price level

When price level rises:

- purchasing power falls
- interest rates rise
- exports become expensive

As a result, the quantity of AD falls, causing an upward movement along AD.

Diagram: Movement along AD



Movement from B to A = upward movement along the same AD curve.

4. Movement along the Aggregate Supply curve

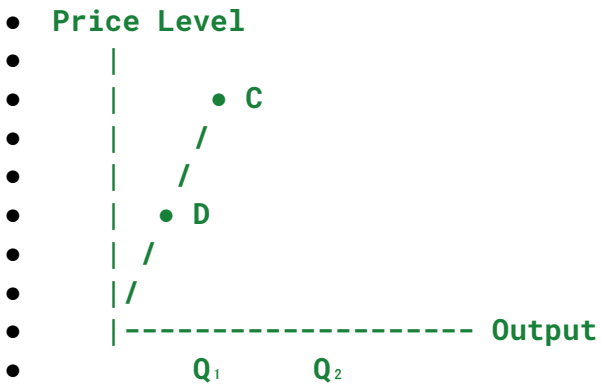
A movement along AS occurs when price level changes, not costs or technology.
Example cause
Increase in price level

Higher prices:

- raise profit margins
- encourage firms to increase output

So quantity supplied increases → upward movement along AS.

Diagram: Movement along AS



Movement from D to C = upward movement along AS.

Answer to the Question no 2

Effect of a Tax Cut in the AD–AS Framework

Initial situation

The economy is initially in **both short-run and long-run equilibrium**, meaning:

- Aggregate Demand (AD_0) intersects Short-Run Aggregate Supply ($SRAS_0$)
- This intersection also lies on Long-Run Aggregate Supply (LRAS)
- Output = potential output ($\bar{Y}$)
- Price level = P_0

Step 1: Effect of a decrease in taxes (T ↓)

A **tax cut increases disposable income**:

$$Y_d = Y - T$$

When T decreases:

- Disposable income rises
- Consumption increases
- Aggregate demand increases

So, **AD shifts rightward from AD_0 to AD_1**.

- **Short-run effect**

In the **short run**, nominal wages are sticky.

Because AD increases:

- Firms sell more output
- Production rises
- Prices begin to rise

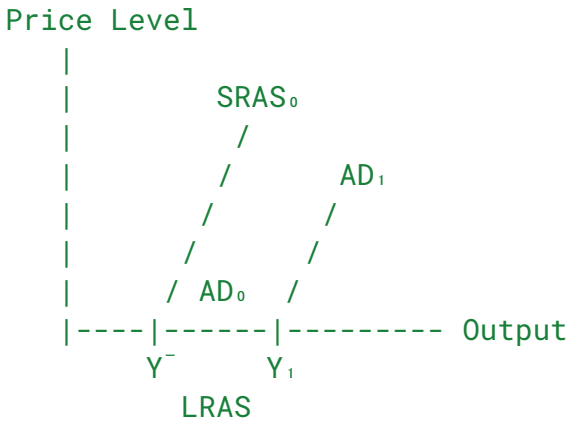
- Short-run outcome:

- Output increases above potential level
- Price level increases

So the economy moves to a point where:

$$Y > Y\_bar$$

Short-run diagram (conceptual)



Short-run equilibrium moves from:

- $(AD_0, SRAS_0) \rightarrow (AD_1, SRAS_0)$

Long-run adjustment process

Because output is now **above potential**, the labor market tightens.

This causes:

- Higher demand for labor
- Nominal wages rise
- Firms' production costs increase

As costs rise:

- SRAS shifts leftward from $SRAS_0$ to $SRAS_1$

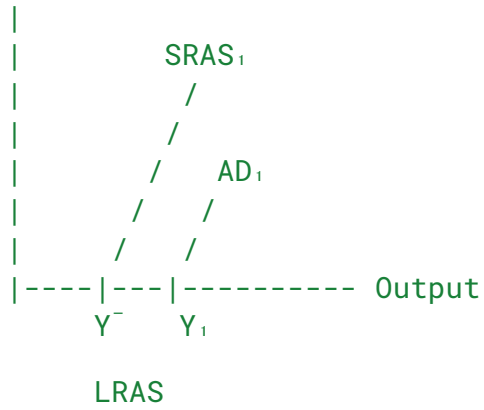
Long-run equilibrium

The leftward shift of SRAS continues until output returns to potential level.

Final outcome:

- Output returns to $\bar{Y}$
- Price level increases further
- AD_1 intersects LRAS and $SRAS_1$

Long-run diagram



Final results (summary)

Variable	Short Run	Long Run
Taxes	↓	↓
Aggregate demand	↑	↑
Output (Y)	↑ above potential	Returns to potential
Price level	↑	↑ further
SRAS	unchanged	shifts left
LRAS	unchanged	unchanged

Answer to the Question no 3

Write the aggregate planned expenditure (AE) function

Given:

$$AE=C+I+G+X-M$$

From the table:

Point A

Y = 0
C = 0, I = 1, G = 1, X = 1, M = 0

$$AE=0+1+1+1-0=3$$

So one point is:

$$(Y,AE)=(0,3)$$

Point B

Y = 10
C = 9, I = 1, G = 1, X = 1, M = 2

$$AE=9+1+1+1-2=10$$

So the second point is:

$$(Y,AE)=(10,10)$$

Since the question says the AE curve is a **straight line**, these two points are enough to draw it.

Draw the Keynesian Cross diagram (conceptually)

Axes

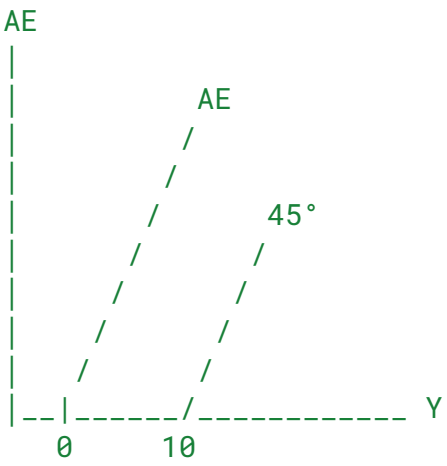
- Horizontal axis: Real GDP (Y)
- Vertical axis: Aggregate Planned Expenditure (AE)

Lines to draw

1. **45-degree line**
   This line shows all points where:
   $$AE=Y$$

2. **AE line**
   Passing through:
   - (0, 3)
   - (10, 10)

Diagram (text version you can reproduce in exams)



The **intersection point of AE and the 45-degree line** gives equilibrium output.

Find equilibrium output

At equilibrium:

AE=Y

From the table:
At Y = 10,

AE=10

So,

Equilibrium real GDP = 10 trillion (2005 dollars)

Interpretation of situations

(i) When AE < Y

Planned spending is less than output.

This implies:

- Firms cannot sell all their output
- Inventories rise unintentionally
- Firms cut production

=> Real GDP falls

(ii) When AE = Y

Planned expenditure equals output.

- No unintended inventory changes
- Firms are satisfied
- Economy is in equilibrium

=> Real GDP remains constant

(iii) When AE > Y

Planned spending exceeds output.

- Firms sell more than they produce
- Inventories fall
- Firms increase production

=> Real GDP rises

Find the multiplier

Compute slope of AE

Slope = change in AE ÷ change in Y

$$\textit{Slope} = (10-3) / (10-0) = 7 / 10 = 0.7$$

This slope is the **marginal propensity to spend (MPS)**.

Multiplier formula

$$\textit{Multiplier} = 1 / (1-\textit{MPS})$$
$$= 1 / (1 - 0.7) = 1 / 0.3 = 3.33$$

Effect of an increase in autonomous expenditure by 3

$$\Delta Y = \textit{Multiplier} \times \Delta A$$
$$\Delta Y = 3.33 \times 3 = 9.99 \approx 10$$

Answer to the Question no 4

Under a fixed exchange rate, the central bank intervenes in the foreign exchange market to keep the exchange rate at the announced level.

1. Target (official) exchange rate
   The government announces a fixed rate, for example:
   1 USD=100 domestic currency units

This becomes the official rate that the central bank commits to maintain.

2. When demand for foreign currency increases
   (pressure for depreciation)
   - People want to buy more foreign goods or assets
   - Demand for foreign currency rises
   - Domestic currency tends to depreciate

   Central bank action:

   - Sells foreign reserves (e.g., dollars)
   - Buys domestic currency

This reduces supply of domestic currency and pushes the exchange rate back to the fixed level.

3. When demand for domestic currency increases
   (pressure for appreciation)
   - Foreigners demand domestic currency
   - Capital inflows rise
   - Domestic currency tends to appreciate

   Central bank action:

   - Buys foreign currency
   - Supplies domestic currency

This increases supply of domestic currency and prevents appreciation.

Role of foreign exchange reserves

A fixed exchange rate can be maintained only if the central bank has:

- Adequate foreign exchange reserves
- Credible monetary policy

If reserves run out, the fixed exchange rate may collapse or be devalued.