ED, DD & Corr. - HOTS & Applications

Q.1. What does MPC refer to in a diagram showing consumption function or consumption line?

Ans. In a diagram showing consumption function or consumption line, MPC refers to the slope of consumption line.

Q.2. Does an excess of AD over AS always imply a situation of inflationary gap?

Ans. No, excess of AD over AS does not always imply a situation of inflationary gap. Inflationary gap occurs only when AD is more than AS corresponding to the full employment level of output.

Q.3. Find saving function when consumption function is gives as: C = 1,000 + 0.6Y.

Ans. We know, saving function is

$$S = -\overline{C} + (1 - MPC)Y$$

So that,

$$S = -1{,}000 + (1 - 0.6)Y$$
$$= -1{,}000 + 0.4Y$$

Q.4. What happens if AD > AS prior to the full employment level of output?

Ans. Excess of AD over AS prior to the full employment level of output refers to the state of disequilibrium in the economy. AD being greater than AS, producers have to cater to demand out of their existing stock of goods. Implying that the desired level of stocks will decrease, inducing greater production and therefore, increase in AS. Increase in AS will continue till the equilibrium is struck between AD and AS.

Q.5. Write an equation of equilibrium level of income. Spell out C-function in this equation.

Ans.

Equation showing equilibrium level of income:

$Y = C + I$

When C-function is described, the equilibrium equation becomes as under:

$Y = \bar{C} + bY + I$

Here, Y= Equilibrium level of income.

$\bar{C}$ = Constant consumption or consumption level when Y = 0.

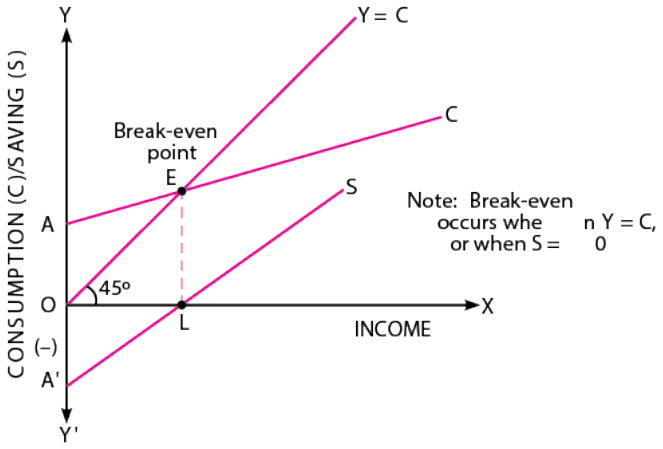
b = Marginal propensity to consume.

Y= Level of income.

I = Level of investment.

Q.6. Draw consumption curve and saving curve in a single diagram and mark the 'break-even point'.

Ans.



In **Fig. 1**, C is the consumption curve and S is the saving curve. OA is the minimum consumption when income level is zero and OA' is negative saving when income is zero. At point E, consumption is equal to income and saving is equal to zero. This is called the break-even point.

Q.7. In an economy, an increase in investment leads to 3-time increase in national income. Calculate marginal propensity to consume.

Ans. Increase in income = 3-time the increase in investment

Or, $\Delta Y = 3\Delta I$

Or, $\frac{\Delta Y}{\Delta I} = 3$

Thus, Multiplier (K) = 3 $\left(K = \frac{\Delta Y}{\Delta I}\right)$

We know,

$$K = \frac{1}{1 - MPC}$$

$\Rightarrow$ $$3 = \frac{1}{1 - MPC}$$

$\Rightarrow$ $$3(1 - MPC) = 1$$

$\Rightarrow$ $$1 - MPC = \frac{1}{3}$$

⇒ 1 – MPC = 0.33⇒ MPC = 1 – 0.33 = 0.6 7Marginal propensity to consume = 0.67.

Q.8. In an economy, an increase in investment leads to increase in national income which is three times more than the increase in investment. Calculate marginal propensity to consume.

Ans. Increase in income = 3 times more than the increase in investment + Increase in investment

Or, $\Delta Y = 3\Delta I + \Delta I$

Or, $\Delta Y = 4\Delta I$

Or, $4 = \frac{\Delta Y}{\Delta I}$

Thus, Multiplier (K) = 4 $\left(K = \frac{\Delta Y}{\Delta I}\right)$

We know,

$$K = \frac{1}{1 - MPC}$$

$\Rightarrow$ $$4 = \frac{1}{1 - MPC}$$

$\Rightarrow$ $$4(1 - MPC) = 1$$

$\Rightarrow$ $$1 - MPC = \frac{1}{4}$$

$\Rightarrow$ $$1 - MPC = 0.25$$

$\Rightarrow$ $$MPC = 1 - 0.25 = 0.75$$

Marginal propensity to consume = 0.75.[**Note:** In Q. 8, income (Y) increases 3 times MORE than the increase in investment (I). This implies that increase in Y = ΔI + 3ΔI.In Q. 7, income (Y) increases 3-time the increase in investment (I). This means that Y increases by a factor of 3. So that ΔY = 3ΔI.]

Q.9. In an economy the autonomous investment is 360 and the marginal propensity to save is 0.3. If the equilibrium level of income is 1,400, then the autonomous consumption is 40. True or False? Justify your answer.

Ans. No, it is not true.

Given, autonomous investment = 360

Marginal propensity to save (MPS) = 0.3

Equilibrium level of income (Y) = 1,400

Marginal propensity to consume (MPC) = 1 – MPS

$= 1 - 0.3 = 0.7$

At the equilibrium level,

$$Y = C + I$$

Or, $$Y = \overline{C} + MPC\,(Y) + \overline{I}$$

$\Rightarrow$ $$1{,}400 = \overline{C} + 0.7\,(1{,}400) + 360$$

$\Rightarrow$ $$1{,}400 = \overline{C} + 980 + 360$$

$\Rightarrow$ $$1{,}400 = \overline{C} + 1{,}340$$

$\Rightarrow$ $$\overline{C} = 1{,}400 - 1{,}340$$

$\Rightarrow$ $$\overline{C} = 60$$

Thus, it is proved that the given statement is false. The autonomous consumption = 60.

Q.10. If in an economy saving function is given by S = (–) 50 + 0.2Y and Y = ₹ 2,000 crore; consumption expenditure for the economy would be ₹ 1,650 crore and the autonomous investment is ₹ 50 crore and the marginal propensity to consume is 0.8. True or False? Justify your answer with proper calculations.

[*CBSE Sample Paper 2016*]

Ans. No, it is not true for all the values.

Given, saving function, S = (–) 50 + 0.2Y

Equilibrium level of income (Y) = 2,000

Marginal propensity to save (MPS) = 0.2

When Y = 2,000, S = (–) 50 + 0.2 (2,000)

S = (–) 50 + 400

S = 350

At the equilibrium level, S = I

∴ I= 350 (∵ S = 350)

We know that, Y = C + S

Or, C = Y – S

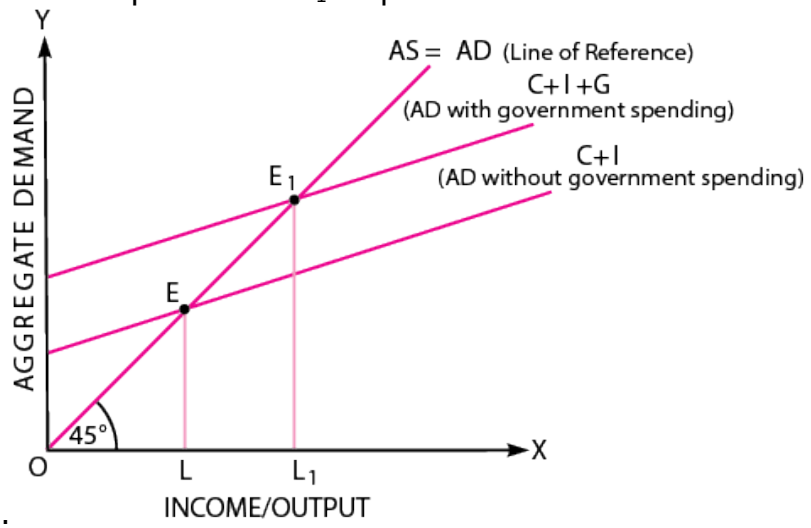
= 2,000 – 350

= 1,650

Marginal propensity to consume (MPC) = 1 – MPS
= 1 – 0.2
= 0.8
Consumption expenditure = ₹ 1,650 crore.
Autonomous investment = ₹ 350 crore.
Marginal propensity to consume = 0.8.

Q.11. Show diagrammatically, the effect on equilibrium level of income/output, of government spending.

Ans. Fig. 2 illustrates how government spending affects equilibrium level of income. It is assumed that like investment expenditure, government spending is also autonomous of the level of income. So that, government spending is indicated by a straight line above and parallel to the existing AD function.Thus, C + I + G is above and parallel to the C + I line because G is assumed to be autonomous of income. Owing to upward shift in AD, equilibrium shifts from point E to E_1. Equilibrium level of income increases from OL to OL_1.



Government Spending Multiplier

It is the ratio between increase in income (ΔY) and increase in government spending (ΔG).

$$K_g = \frac{\Delta Y}{\Delta G} = \frac{1}{1-b} = \frac{1}{1-MPC}$$, where K_g = Government spending multiplier.

Q.12. If MPC = 0.5, and increase in investment is ™ 1,000, how much is the total increase in income. Explain the process how income changes as a consequence of change in investment.

Ans.

We know,

$$K \text{ (Multiplier)} = \frac{1}{1 - MPC}$$

$$= \frac{1}{1 - 0.5} = \frac{1}{0.5} = 2$$

Increase in income (ΔY) is K times the increase in investment (ΔI).

So that, $\Delta Y = K \cdot \Delta I$

Or, $\Delta Y = 2 \times 1{,}000 = ₹\ 2{,}000$

Process of Change in Income (also called Multiplier Process)As a consequence of ΔI = ₹ 1,000, increase in income occurs in various rounds as under:

Round 1	ΔY = 1(1,000) = 1,000	Because expenditure of ₹ 1,000 becomes income of the households.
Round 2	ΔY = 0.5(1,000) = 500	Because out of ₹ 1,000, households spend 0.5 (1,000) = 500
Round 3	DY = 0.5^2 (1,000) = 250	Because out of 500,households spend 0.5 (500) = $(0.5)^2$1,000 = 250
Round 4	DY = 0.5^3 (1,000) =125	Because out of 250,households spend 0.5 (250) = $(0.5)^3$1,000 = 125.

and so on ..... .The process of income generation continues in an infinite geometric progression, which can be expressed as under:

$$\Delta Y = 1 \times 1{,}000 \quad \text{round 1}$$
$$+ (0.5) \times 1{,}000 \quad \text{round 2}$$
$$+ (0.5)^2 \times 1{,}000 \quad \text{round 3}$$
$$+ (0.5)^3 \times 1{,}000 \quad \text{round 4}$$
$$+ (0.5)^4 \times 1{,}000 \quad \text{round 5}$$
$$+ \ldots\ldots\ldots\ldots$$
$$= \frac{1}{1 - MPC} \times 1{,}000$$
$$= \frac{1}{1 - 0.5} \times 1{,}000$$
$$= \frac{1}{0.5} \times 1{,}000$$
$$= 2 \times 1{,}000$$
$$= ₹\ 2{,}000$$