

(6)

(b) An economy is described by the following equations :

$$\text{AD equation : } Y = 4000 + 2\frac{M}{P}$$

$$\text{SRAS equation : } Y = \bar{Y} + 100(p - p^e)$$

$$\text{Okun's law : } \frac{Y - \bar{Y}}{\bar{Y}} = -2(u - \bar{u})$$

$$\text{Full employment output level } \bar{Y} = 6000$$

$$\text{Natural rate of unemployment } (\bar{u}) = 0.05$$

- (i) Suppose that the nominal money supply has long been constant at $M = 4000$ and is expected by the public to remain constant forever. What are the equilibrium values of price level P , the expected price level P^e , expected inflation π^e , output Y and the unemployment rate u ?
- (ii) What are the short run equilibrium values of P , P^e , Y and u if there is an unexpected increase in money supply M from 4000 to 4488?
- (iii) What is the slope of the expectation augmented Phillip's curve in this economy?

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BACHELOR OF ARTS EXAMINATION, 2025

(2nd Year, 1st Semester)

MACROECONOMICS—I

Course : ECO/UG/MAJOR/TH/21/202

Time : Two Hours

Full Marks : 30

[CO1] Answer *any one* question.

6×1=6

1. (a) How is the Saving-Investment equality arrived at in a classical economy? Is this same as Keynesian Saving-Investment equality? Justify.
- (b) In a closed economy Simple Keynesian model without government, there are two groups of income earners. Group 1 earns 800, while the income of Group 2 is $(Y - 800)$, where Y denotes Net Domestic Product (NDP). Average consumption propensities of Group 1 and Group 2 are 0.6 and 0.5 respectively. Investment function is given by $400 + 0.1Y$.
- (i) Derive the aggregate saving function and equilibrium amount of saving.
- (ii) If a transfer of income of 100 units takes place from Group 1 and Group 2, how will it affect the aggregate saving function?
- (iii) Do you observe paradox of thrift here? Explain.

[(1+1)+(1+2+1)]

[Turn Over]

(2)

2. Calculate (i) National Income, (ii) Personal Income and (iii) Disposable Personal Income from the given data :

Compensation of Employee	1771.5
Corporate profit with inventory valuation	191.5
Proprietors' income	134.6
Rental income	33.6
Net interest	215.0
Subsidies less current government surplus	5.1
Business transfer payments	11.6
Indirect business tax	251.1
Capital consumption allowances	321.7
Contributions for social insurance	238.9
Government transfer payments	321.6
Personal interest income	308.6
Personal dividend income	61.3
Personal tax	244.5
Non tax payments	143.6
Personal outlays	1908.5
Statistical discrepancy	-0.8

2+2+2

[CO2] Answer any one question.

9×1=9

3. (a) In the IS-LM framework, how does the effectiveness of an expansionary fiscal policy in the form of increase in government expenditure (G) differ in the following two cases?

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[Continued]

(5)

- (b) In presence of wage rigidity, is the AS curve vertical? Justify.
- (c) Consider the following data for the economy :

$$C = 295 + 0.8(Y - T)$$

$$I = 275 - 50r$$

$$T = 25; G = 50$$

$$\left(\frac{M}{P}\right)^d = 0.65Y - 25r$$

$$M^s = 330$$

$$Y = 40N^{0.5}$$

$$W = 20$$

- (i) Derive the equations of AD and AS curves and find out the equilibrium values of output, prices and interest rate.
- (ii) If government expenditure increases by 90 units, find out the change in output by deriving the appropriate formula.

[CO4] Answer all questions.

[(1+1)+(2+2+1)]

6. (a) Explain the rationale behind the shape of the Phillip's curve under :
- (i) Adaptive Expectation
- (ii) Rational Expectation

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[Turn Over]

(3)

- (i) When money market is in liquidity trap.
- (ii) When interest sensitivity of money demand is zero.

(Use mathematical derivations and graphical expositions to explain your answer.)

- (b) Consider the following money market equations for an economy :

$$\left(\frac{M}{P}\right)^s = 500$$
$$L = 0.1Y - 100r$$

where $L(\cdot)$ is the money demand function.

At $Y=1000$, with money market in equilibrium, excess demand for goods and services is 100, whereas at $Y=2000$, it is -100. Interest sensitivity of aggregate demand for goods and services is 100.

- (i) Derive excess demand for goods and services as a function of Y where r is always such that the money market is in equilibrium. Find the equilibrium value of Y .
- (ii) Suppose the interest sensitivity of real money balance falls by 10 units. How will it affect the state of the money market at any point on the original LM curve?

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[Turn Over]

(4)

- (iii) How much Y is to be changed for a given r and r has to be changed for a given Y to restore equilibrium in the money market?
- (iv) Indicate horizontal and vertical shifts of the LM curve by using an appropriate diagram.

[(1.5+1.5)+(2+1+2+1)]

4. A dynamic multiplier in period terms has a linear consumption function with Robertsonian lag distributed over two periods : $C_t = c_1Y_{t-1} + c_2Y_{t-2}$. Show that, when Y_t is measured from A/S , (where A is the autonomous expenditure and s is the marginal propensity to save) there is a second-order difference equation with solution $Y_t = B_1p_1^t + B_2p_2^t$, where B_1 and B_2 are arbitrary and p_1 and p_2 are the roots of $p^2 - c_1p - c_2 = 0$. Deduce that p_1 and p_2 are real and that their approximate values (from a binomial expansion) are $c_1 + \left(\frac{c_2}{c_1}\right)$ and $-\left(\frac{c_2}{c_1}\right)$ when c_2 is small. Hence show that $y_t \rightarrow 0$ as $t \rightarrow \infty$ (with an alteration that dies rapidly away) when $c_1 < 1$ and c_2 is small. Examine the case $c_1 = 0.7$ and $c_2 = 0.08$. [4+3+2]

[CO3] Answer all questions. [2+1+(3+2)]

5. (a) Why does the slope of AS curve differ in the short run and the long run?

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[Continued]