Dr. B. R. Ambedkar National Institute of Technology, Jalandhar
B.Tech. (CSE) VIth Semester
HMCI-201, Economics for Engineers
End Semester Examination

Duration: 3 Hours   Max. Marks: 50   Date: 14 May 2024

Marks Distribution & Mapping of Questions									
Question Number	1	2	3	4	5	6	7	8	9
Marks	4	4	4	4	4	6	6	6	12
CO No.	3	3	1	2	2	2,3	1	2	1
Learning Level*	An	E	Ap	Ap	An	An	Ap	Ap	An

***Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), and Create (C)**

Instructions:

   I.   Use of calculators is allowed. All questions have to be attempted.

  II.   If some information is missing, the students can make necessary assumptions. The assumptions should be clearly stated in the answer script.

 III.   You must demonstrate how you arrived at and interpret the answers.

Section A (5*4=20 marks)

1. Other things equal, what effect will each of the following changes independently have on the equilibrium level of real GDP in a private closed economy?
    a. A decline in the real interest rate
    b. An overall decrease in the expected rate of return on investment
    c. A sizable, sustained increase in stock prices
    d. Prosperity abroad

2. Enumerate government's fiscal and central bank's monetary policy options for controlling severe demand pull and cost push inflation?

3. Which of the following is included in this year's GDP? Which are excluded? Explain your answers.
    a. Social security payments received by a retired factory worker
    b. Unpaid services of a family member who painted the family home
    c. A monthly allowance that a college student receives from home
    d. Money received by Sanskar when he resells his nearly branded new Honda bike to Ghanshyam
    e. The publication and sale of new college text book
    f. An increase in leisure resulting from a 2-hour decrease in the length of the work week, with no reduction in pay
    g. A $2 billion increase in business inventories
    h. The purchase of 100 shares of Alphabet (Google parent company)

4. Refer to the table appended with this question:
   a. Fill in the missing numbers in the table.
   b. What is the breakeven level of income in the table? What is the term that economists use for the savings situation shown at $240 level of income?
   c. For each of the following items, indicate whether the value in the table is either constant or variable as income changes: the MPS, the APC, the APS.

All figures in $

Level of Output and Income (GDP=DI)	Consumption	Saving	APC	APS	MPC	MPS
240		-4				
260		0				
280		4				
300		8				
320		12				
340		16				
360		20				
380		24				
400		28				

5. In which direction will each of the following occurrences shift the investment demand curve, other things equal?
   a. An increase in unused production capacity
   b. Business taxes decline
   c. Widespread pessimism arises about future business conditions and sales revenues
   d. A major new technological breakthrough creates prospects for a wide range of profitable products

Section B (3*6=18 marks)

6. Eye-de-ho Potatoes is a product of the Coeur d'Alene Growers 'Association. Producers in the area are able to switch back and forth between potato and wheat production, depending on market conditions. Similarly, consumers tend to regard potatoes and wheat (bread and bakery products) as substitutes. As a result, the demand and supply of Eye-de-ho Potatoes are highly sensitive to changes in both potato and wheat prices. Demand and supply functions for Eye-de-ho Potatoes are as follows:

$$Q_D = -1450 - 25P + 12.5P_w + 0.1Y \ (Demand)$$

$$Q_s = -100 + 75P - 25P_w - 12.5P_L + 10R \ (Demand)$$

Where, P is the average wholesale price of Eye-de-ho Potatoes ($ per bushel), PW is the average wholesale price of wheat ($ per bushel), Y is income (GDP in $ billions), PL is the average price of unskilled labor ($ per hour), and R is the average annual rainfall (in inches). Both QD and QS are in millions of bushels of potatoes.

   a. When quantity is expressed as a function of price, what are the Eye-de-ho Potatoes demand and supply curves if Pw= $4, Y= $15,000 billion, PL= $8, and R= 20 inches?
   b. Calculate the surplus or shortage of Eye-de-ho Potatoes when P= $1.50, $2, and $2.50.
   c. Calculate the market equilibrium price-output combination.

7. The data in columns 1 and 2 in the table below are for a private closed economy.
   a. Use columns 1 and 2 to determine the equilibrium GDP for this hypothetical economy.
   b. Now open up this economy to international trade by including the export and import figures in columns 3 and 4. Fill in columns 5 and 6 and determine the equilibrium GDP for the open economy. What is the change in equilibrium GDP caused by the addition of net exports?
   c. Given the original $20 billion level of exports, what would be the net exports and equilibrium GDP if imports were $10 billion greater at each level of GDP?
   d. What is the multiplier in this question?

All figures in Billions

Real Domestic Output (GDP=DI)	Aggregate Expenditures, Private closed economy	Exports	Imports	Net Exports	Aggregate Expenditures, Private open economy
200	240	20	30		
250	280	20	30		
300	320	20	30		
350	360	20	30		
400	400	20	30		
450	440	20	30		
500	480	20	30		
550	520	20	30		

8. Suppose the government's national income and product accounts reveal the following information:
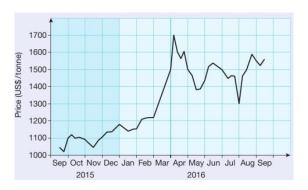
Personal consumption expenditures	525
Gross private domestic investment	110
Consumption of fixed capital (depreciation)	31
Government purchases	72
Net exports	−15
Compensation of employees	462
Proprietors' income	59
Interest	29
Rents	26
Corporate profits	75
Corporate income taxes	28
Dividends	30
Undistributed corporate profits	17
Net foreign factor income	12
Transfer payments	33
Social Security contributions	39
Taxes on production and imports	22
Personal taxes	71
Personal saving	4

   a. Using the data in the table, verify that the income approach and the expenditure approach yield the same measure of GDP.
   b. Find NDP by making the appropriate adjustment to GDP.

c. Verify that National Income can be found either by making the appropriate adjustments to NDP or by adding up the appropriate components of income and taxes.
d. Find PI, personal income, by making the appropriate adjustments to NI.
e. Make the appropriate adjustment to PI to find DI, disposable income.
f. Verify that DI is the sum of personal consumption expenditures and personal saving.

Section C | Case Study: The Global Supply of Coconuts (4*3=12 marks)

There has been a sharp increase in the global demand for coconuts (and products made from coconuts) in recent years. For example, in supermarkets, coconut milk is being sold with ring pull opening devices that allow it to be drunk like a soft drink. Also, reports have suggested that coconut sugar is a much healthier alternative to traditional sugar and celebrities have been observed consuming coconut products. For example, actress Gwyneth Paltrow claimed that she uses coconut oil as a mouthwash for oral health and whitening her teeth. The rising demand has resulted in higher prices for coconuts. Figure shows the price of coconut oil between 2015 and 2016.

Unfortunately, suppliers have not been able to react to the rising prices by increasing the quantity supplied. Globally, the supply of coconuts is falling. One reason for this is linked to the age of the industry. Most coconut trees are grown in India and Southeast Asia and their trees are simply past their best. Today's coconut trees were planted more than 50 years ago, according to Hiroyuki Konoma, a representative for a United Nations Food and Agriculture Organization. That puts them more than 20 years past their peak production time. Also, the Philippines is still recovering from the damage caused by typhoon Haiyan, which wiped out about 15 per cent of its trees in 2013. It will take at least another year for new trees to bear fruit. Finally, Indonesia, the world's top producer of coconuts, has failed to replace old low-yielding coconut trees. This means that estates are less productive. The government is also encouraging more production of corn and soya. It is reckoned that production growth is currently 8 per cent behind demand growth.

9. Answer the following questions:
   a. Describe what is price elasticity of supply (PES) in context of this business case.
   b. Why is the supply of coconuts likely to be inelastic?
   c. Describe why the price of coconuts has risen sharply.
   d. How might the ability to store coconuts for long periods of time affect PES?

***