

**NANYANG TECHNOLOGICAL UNIVERSITY**  
**SCHOOL OF SOCIAL SCIENCES**  
**SEMESTER 1 AY23-24**  
**HE1002 MACROECONOMICS I**  
**PROBLEM SET 2**

**Question 1**

Calculate the four components of expenditure and GDP for the following economy using data from the following table.

|  |       |
|--|-------|
| Consumption expenditures                   | \$550 |
| Exports                                    | \$75  |
| Government purchases of goods and services | \$200 |
| Construction of new homes and apartments   | \$100 |
| Sales of existing homes and apartments     | \$200 |
| Imports                                    | \$50  |
| Beginning-of-year inventory stocks         | \$100 |
| End-of-year inventory stocks               | \$125 |
| Business fixed investment                  | \$100 |
| Government payments to retirees            | \$100 |
| Household purchases of durable goods       | \$150 |

**Question 2**

Sara's Rock Painting Stand painted 1,000 rocks last year and 1,200 rocks this year. She charged \$4 per rock last year and \$5 this year. If last year is taken as the base year, find Sara's contribution to both nominal GDP and real GDP in both years. Which measure would be better to use if you were trying to measure the change in Sara's productivity over the past year? Why?

**Question 3**

What are the costs of a high unemployment rate? Do you think providing more generous government benefits to the unemployed would increase these costs, reduce these costs, or leave them unchanged? Discuss.

**Question 4**

Skyler is downloading labour market data for the most recent month, but her connection is slow and so far this is all she has been able to get:

|                         |            |
|-------------------------|------------|
| Unemployment rate       | 5.9%       |
| Participation rate      | 62.5%      |
| Not in the labour force | 63 million |

Find the labour force, the working-age population, the number of employed workers, and the number of unemployed workers.

**Question 5**

How would each of the following likely affect the real wage and employment of workers on an automobile plant assembly line?

- (a) Demand for the type of car made by the plant increases.
- (b) A sharp increase in the price of petrol causes many commuters to switch to mass transit.
- (c) Investment in new machineries increases daily output of the assembly line by 20%.

**Question 6**

Skilled or unskilled workers can be used to produce a small toy. Initially, assume that the wages paid to both types of workers are equal.

- (a) Suppose that electronic equipment is introduced that increases the marginal product of skilled workers (who can use the equipment to produce more toys per hours worked). The marginal products of unskilled workers are unaffected. Explain, using words and graphs, what happens to the equilibrium wages for the two groups?
- (b) Suppose that unskilled workers find it worthwhile to acquire skills when the wage differential between skilled and unskilled workers reaches a certain point. Explain what will happen to the supply of unskilled workers, the supply of skilled workers, and the equilibrium wage for the two groups. In particular, what are the equilibrium wages for skilled workers relative to unskilled workers after some unskilled workers acquire training?

**Question 7**

For each of the following scenarios, state whether the unemployment is frictional, structural, or cyclical. Justify your answer.

- (a) Ted lost his job when the steel mill closed down. He lacks the skills to work in another industry and so has been unemployed over a year.
- (b) Alice was laid off from her job at the auto plant because the recession reduced the demand for cars. She expects to get her job back when the economy picks up.
- (c) Tao looked for a job for six weeks after finishing college. He turned down a couple of offers because they didn't let him use the skills he had acquired in college, but is now about to accept a job in the area that he trained for.