Macroeconomics and Advanced Business Mathematics

As per new B Com CBCS syllabus 2017 for CU

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Dedicated to

Lakshmikanta Bhattacharjee, Alaka Bhattacharjee, Manab Basu Mallik, Shikha Basu Mallik, and Late Kunal Chandra Mitra

–Sujatra Bhattacharyya

All my beloved students

–Indrajit Das

Preface

Economics and mathematics are interlinked. It will be very difficult to pursue economics without mathematics. This high interdependence between these two subjects led to the combined paper of Macroeconomics and Advanced Business Mathematics at the University of Calcutta (CU).

Macroeconomics is the study of aggregates that helps us formulate various strategies for growth, reduction of unemployment, control of inflation and business cycle, stability of price, etc. In order to formulate these strategies, mathematical knowledge is necessary. Statistical techniques like regression and probability along with basic mathematical techniques like integration and differentiation are indispensable in economic analysis. The public policies formulated by planners comprise fiscal and monetary policies. Fiscal policy attempts to stimulate the product market and thus affect price and output levels. Monetary policy is a tool that intervenes into the money market to meet the growth and stability objectives of the government. This policy regulates money demand and supply to attain both long-term and short-term growth objectives of the government.

We are hopeful that this book will immensely help the students in understanding the basic concepts of the subject. The numerous examples and exercises provided in the book will enable them to practise well before their examinations.

Key Features

- The book has been prepared on the basis of the CBCS syllabus of CU.
- The book uses a lucid language so that it is understandable to all sections of the students.
- Several diagrams are given in order to facilitate understanding of the subject matter.
- Along with graphical descriptions, economic interpretations are also provided.
- Numerical examples are added in relevant portions for better understanding of the theory.
- The numerical problems that appeared in earlier years' question papers are inserted in the numerical examples with solutions.
- The solutions to the last year's question paper (earlier syllabus) are provided in the book. For solutions to question papers of 2017 and 2018, refer to the Online Resource Centre.

Organization of the Book

The first part (**Module I**) of the book comprises macroeconomic theory which has five units. These units are interlinked and they provide a comprehensive idea of the theory of macroeconomics.

In **Unit 1** various macroeconomic variables and concepts are given briefly as per the guidelines of the syllabus. All these concepts are fundamental and are discussed in a detailed manner in subsequent units.

Unit 2 initially discusses the variables and later brings out the interrelationships between these concepts. The unit focuses on national income accounting and the various problems associated with it.

Unit 3 shows the basic macroeconomic identity and determines the equilibrium income in Keynesian framework. Detailed analyses of consumption, investment and savings are given. Autonomous multipliers are also determined in this unit.

The motive of holding liquid money is analysed in **Unit 4**. This unit also discusses money market along with product market. Product market equilibrium is discussed in terms of IS curve. Similarly, money market equilibrium is discussed with the help of LM curve. The unit economically depicts the interaction between product and money markets. Rate of interest is introduced in the unit as a determinant of the investment and the speculative demand for money.

Unit 5 deals with the relationship between demand for money and supply of money. Along with this, commercial banking structure is also mentioned. The determinants of money supply are discussed in terms of various monetary variables. All the types, causes and effects of inflation are presented with some glimpses of unemployment.

The second part (**Module II**) of the book deals with advanced business mathematics. In this portion we will get to learn mainly those portions of Algebra and Calculus which are useful in Economics too.

In the Calculus part, at first the basic concepts of function and its classification, and the properties of functions are discussed. Next the concept of limit of a variable and function, limit of some standard functions and the concept of continuity and discontinuity are analysed. All these are covered in **Unit 1**.

Differentiation and integration are two important concepts in calculus. In **Unit 2** of this module first order differentiation of different types of functions are discussed along with various examples, which are differentiation of composite functions, parametric functions, implicit functions, logarithmic functions, etc. The concept of second order derivative of a function is also introduced with different problems. After introduction of elementary differential calculus, the application of differential calculus is discussed. The significance of derivatives, and their meaning in different aspects such as rate measures and economics are covered. Integration is an important concept in calculus and basic methods of indefinite integration is discussed in this unit in a manner that one can easily understand and learn the methods of solving indefinite integration using basic formulas of integration.

In **Unit 3**, increasing and decreasing functions and maximum and minimum values of a function are elucidated. The application of differential calculus in business and commerce is an important area of this subject. In this part calculation of maximum and minimum values in different economic principles are explained. For the calculation of area of curves using the principles of definite integration, relevant rough sketches of the curves are also shown. In the portion of integral calculus, only the basic formulas and their applications are discussed.

In the Algebra part, the important and basic concepts of matrix and determinant are required to be learned. In **Units 4 and 5** some basic concepts related to matrix and determinant, and finally the system of linear equations solved using matrices and determinants are described.

In order to acquire a comprehensive knowledge of mathematics, students must know the main concepts of all these topics.

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This is the first appearance of the book. Hence, it is very difficult to make it fully error free. If any such error is detected, please let us know so that we can rectify them in future editions. Feedback and suggestions for improving the future editions are always welcome and can be sent at sujatra_bh@rediffmail.com and indrajitdas2@rediffmail.com.

Sujatra Bhattacharyya
Indrajit Das

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UNIT 1 Macroeconomics—Scope and Basic Concepts

LEARNING OBJECTIVES

After studying this chapter, you will be able to understand

- basic concepts of microeconomics and macroeconomics
- distinction and interrelationship between microeconomics and macroeconomics
- scope, objectives and concepts of macroeconomics
- definition and relevance of various macroeconomic variables
- classification of commodities on the basis of end-use

Economics is the branch of science that studies how human society optimizes the scarce resources of earth to meet the needs of the human race at present and also in the future. Every individual in the society endeavours to meet his/her wants given the limited means at hand. At the same time the state takes up policies to ensure that the needs of all sections of the society are satisfied and that the means increase over time to have better standard of living in the future. The activities of the individuals as well as the state both aim at the optimal use of resources. From these two points of views towards optimization of resource use, we get two major branches of economic study—microeconomics and macroeconomics.

1.1 MICROECONOMICS AND MACROECONOMICS

The following paragraphs would help us understand the meaning of the two concepts—microeconomics and macroeconomics—in detail.

1.1.1 Microeconomics

Microeconomics is the study that deals with the behaviour of individual decision-making units in optimizing their choices. By individual decision-making units we mean the people who take economic decisions for themselves and for others related to their activities. For example, a consumer aims at maximizing his/her satisfaction or utility with her income which is fixed at a particular point of time. The entrepreneur tries to maximize profit with the given cost of inputs required for production. It is the same way you try to utilize your time in a day, which is fixed at 24 hours, to satisfy your needs of rest, enjoyment, studies and socializing to gain the maximum satisfaction. Thus microeconomics studies the behaviour of individuals who are optimizing their utility, profit, sales, etc. given their income, cost, revenue and so on.

Studies in microeconomics encompass subjects such as consumer behaviour, theory of the firm, market morphology, distribution, etc. Utility, profit, revenue, price, cost, etc. are microeconomic variables.

1.1.2 Macroeconomics

Macroeconomics is the branch of economics that studies the economy as a whole. It deals with the problems and prospects of the economy of a country or region. In this situation the optimization covers a broad

framework where the economy's resources are allocated optimally to obtain the desired growth path for all sections of the society. Macroeconomics is concerned with the study of national income and its growth over time and how each sector of the economy—agriculture, industry, services, etc. contributes to this growth trajectory. It also studies how the economy interacts with other economies through trade relations. It is also concerned with the optimal employment of the economy's resources, both human and non-human, to increase income and well-being.

Macroeconomics spans around the topics of growth, employment, inflation, investment, international trade, public finance, banking, and so on. National income, price level, investment and unemployment are some of the macroeconomic variables.

1.1.3 Interrelationship between Microeconomics and Macroeconomics

The two major branches of economics, macroeconomics and microeconomics, study economics from two different aspects. This does not mean that they are two segregated branches of study. There is a strong interrelationship between the two and one cannot be studied without the understanding of the other.

An individual decision-maker is affected by changes in the macroeconomic scenario. A consumer's decision making will be affected by an inflationary situation in the economy or the tax imposed by the government. Thus consumer behaviour, which is a microeconomic issue, is affected by macroeconomic changes in inflation and taxation.

Macroeconomics is also dependent on microeconomics. Inflation rate is affected by changes in the prices of individual goods. The aggregate price level is the weighted sum of the prices of individual products. National income increases when income of the individuals in the economy increases. To frame policy at the macro level, the economic authority has to maintain a close look at the microeconomics through data and statistics.

1.1.4 Distinction between Microeconomics and Macroeconomics

We can distinguish between micro and macroeconomics through Table 1.1.

Table 1.1 Differences between Microeconomics and Macroeconomics

Basis of Difference	Microeconomics	Macroeconomics
1. Definition	Microeconomics is the study that deals with the behaviour of individual decision-making units in optimizing their choices	Macroeconomics is the branch of economics that studies the economy as a whole or aggregates
2. Broadness	Since microeconomics is concerned with individual decision-making, it is comparatively a narrower concept	Macroeconomics is the study of the aggregates, hence it is a broader concept
3. Central Issue	The central issue of microeconomics revolves around the determination of price and allocation of resources	The central problem of macroeconomics is the determination of equilibrium income and employment
4. Principal tools	Generally, the principal facets of microeconomics are demand and supply by which price can be determined	The main tools of macroeconomics are aggregate demand and aggregate supply
5. Scope	It deals with individual price, income, profit and utility, etc.	It deals with aggregate concepts like national income, national output, employment, etc.
6. Decision-making units	Here the decision-making units are individual consumers, producers and the firm	Here the decision-making units are monetary authorities like central bank, government, etc.

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7. Analysis of equilibrium	Microeconomic theories are mainly involved in the determination of equilibrium of consumer, producer, firm and industry	Macroeconomic theories are mainly concerned with the determination of equilibrium income, employment, wage, rate of interest, etc.
8. Policymaking	Microeconomic theories assist in the formulation of the policies related to resource allocation in an economy	Macroeconomic theories formulate various policies like fiscal and monetary policies to tackle various macroeconomic problems in an economy
9. Subject matter	It is often termed as the theory of price	It is often termed as the theory of income, output and employment

1.2 SCOPE AND OBJECTIVES OF MACROECONOMICS

The study of macroeconomics is important to understand how the economy of a country or a region functions. It helps us to track the overall performance of the economy over time and to compare this performance with other economies. When we trace the changes an economy has gone through over a period of time, we can understand the stages of growth and development it has undergone and we can analyse its future trends. This helps the government to frame appropriate economic policies to steer the economy in the correct direction. As we look into the economic changes India has gone through since independence, we can understand how the country has grown from a closed planned economy towards rapid industrial and service sector growth and is now on the path to becoming a free market economy. In the same way, study of economies of other countries will allow us to study their macroeconomic policies and directions and their growth experiences. Macroeconomics also helps us to compare the economic parameters within an economy between different regions. When we compare the macroeconomic trends between the different states of India, we will be able to understand how differences in geographical features, availability of resources and sociological factors create differences in the economic scenario of regions within a country. According to the different economic scenarios present in different regions, coherence in policies can be maintained.

Macroeconomics covers a wide range of dimensions of an economy which is not confined within the economic perspective but is associated with political, social, demographic, historical, cultural as well as geographical aspects of the country or region. Macroeconomy encompasses the employment scenario, growth concerns, capital and investment issues, developmental status, environmental conditions and other related facets of a region. It helps us understand the major means of income of the people of an area, the causes of unemployment and the potential of the economy to generate employment and income for the people. The study also considers how the overall production and income in the economy has grown over time, whether this growth is comparable with similar other regions or if there is a major shortfall that has to be recovered over time with growth strategies. Macroeconomics also studies the movement of aggregate prices in the economy. If the price level is too high, it indicates that the economy is facing an inflationary situation which makes it difficult for people to purchase necessary goods and services as these become expensive. The authority has to take appropriate action to curb the rising trend in prices. On the other hand if the price level is too low, it increases the distress of producers. The farmers and sellers of other products become unable to recover the cost of production and their income falls. Here also, the government has to intervene to provide a support system to check the fall in prices. For intervention in the market to adjust the aggregate price, the study of monetary economics is indispensable. Macroeconomics tells us about the evolution of money from the ancient barter system. The present monetary system that includes money and other related assets, the financial markets and the complex interplay of regional and global markets and financial institutes is an important branch of macroeconomic study.

Taking a closer look at the macroeconomic trend of a region we can understand which sectors are performing well and which sectors are lagging behind. This study helps the policy makers in making direct investments towards the sectors that are facing retardation in growth. Macroeconomics also helps us understand whether

the economy has the capital to follow a robust growth path. It helps to build both human and physical capital by framing suitable policy through the understanding of macroeconomic theory and actual economic trends. A country cannot grow in isolation. It needs to have trade relations with other regions to obtain goods and services that are unavailable in that region from other regions where they are abundantly available. Thus the importance of trade is stressed by macroeconomic theories and principles.

Sustainable development is another important aspect of the macroeconomic study. There is a growing concern towards environment since the 1980s. Studies have found that the present model of economic growth is leading to environmental degradation and is going to land the human civilization into a perilous situation. To avoid degradation and to save the world from environmental catastrophe, it is important to reinvent the growth models to make growth sustainable by incorporating environmental concerns into the system of macroeconomic study. Sustainable growth framework cannot be modelled by each economy in isolation. Since the economies of the world are interconnected through trade and political interactions, sustainable growth requires cooperation across the globe.

We can see that macroeconomics gives us a wide angle view of both regional and global economies. Through understanding and application of macroeconomic theories, we can find solutions to economic problems and steer the economy at both local and global levels towards meaningful growth that covers all the sections of the economy and is in consonance with environmental well-being.

1.3 MACROECONOMIC VARIABLES AND CONCEPTS RELATED TO MACROECONOMICS

To begin with the study of macroeconomics we need to be acquainted with some of the variables that we often come across in dealing with the subject. The understanding of these variables will make us comprehend the macroeconomic phenomenon and decision-making in a better way.

Stock variable

The variable which is defined at a particular point of time is known as a stock variable. The changes in the stock variable are recorded over discreet intervals of time – monthly, quarterly, yearly, and decadal and so on. For example, capital and wealth are stock variables. We can note the amount of capital stock in a country on a particular date and find whether it has changed from the stock that was available a year ago. This way, we can understand whether the capital stock has increased within a year.

Flow variable

The variable which is defined on a continuous time frame is known as a flow variable. Its value keeps on changing with time. For example, investment takes place over time adding to the stock of capital. Similarly, income is earned monthly, weekly or even daily to add to the wealth of a person.

To understand the relationship between the stock and flow variables, let us consider a simulation that we are acquainted with in our daily life. The overhead tank of your house is filled once or twice a day through a pump that lifts the water to the tank. All day round you get water whenever you open a tap. Thus the tank is the stock of water and when you operate the tap or the shower you get the flow. The stock has to be replenished by switching on the pump when the water level comes down in the tank. Thus, overhead tank is the stock and tap water is the flow which you get continuously. In the same fashion, the wealth in your family is the stock. When you spend, the wealth is diminished and when income is earned, the wealth is replenished. Both expenditure and income are flows.

Distinction between stock variable and flow variable

We can understand the differences between the stock and flow variables using the Table 1.2.

Table 1.2 Difference between Stock Variable and Flow Variable

Basis of Difference	Stock Variable	Flow Variable
Definition	The variable which is defined at a particular point of time is known as a stock variable.	The variable which is defined on a continuous time frame is known as a flow variable.
Nature	Stock is a static concept.	Flow is a dynamic concept.
Time frame	Stock has no time dimension.	Flow has a time dimension.
Measurement	Stock is measured at a particular point of time. Eg. say, as on 1st July, 2019.	Flow is measured on the basis of a time frame or over an interval of time. Eg. say, rainfall in the month of July.
Examples	Stock of wealth, money supply, financial assets, inventories, debt, etc.	National Income, Gross National Product, consumption, export, import, etc.

Let us now introduce ourselves to some frequently used macroeconomic variables. This brief understanding will later on help us understand the theories and principles that are presented in the subsequent sections of this book.

National Income (NI)

This is the most well-known macroeconomic variable that you might have often come across in the daily newspaper. This variable represents the sum total of the income earned by the people of the economy from economically productive activities. This means that the earnings of a thief cannot be considered as part of the national income as the activities of theft do not create a new product. The income of a farmer will be included in the national income as the farmer has earned the income by selling the crop that he has grown on the field.

Gross Domestic Product (GDP)

As the name suggests, GDP is the total amount of goods and services produced in an economy in a year. This is an important variable as it indicates how an economy is performing in terms of the total production of goods and services. Increase in the GDP indicates that the economy is growing and it is able to provide more goods and services for its people to meet their needs. When the GDP growth rate slows down, it indicates that the economy is producing goods and services at a slower pace and will not be able to meet the needs of the society, ensure well-being and provide a good standard of living.

Economic growth and development

The term growth in economics refers to the economic expansion in terms of enhanced production that generates more income. Thus it is believed to be the key to economic well-being. To put it in simple words, economic growth is the increase in income and output in an economy over time. Thus economic growth is measured by the gross domestic product (GDP) of an economy which gives us the monetary value of the total production of goods and services taking place in an economy.

Economic development is a comprehensive concept that encompasses every possible aspect of human living. We can say that development can be attained when a society ensures basic necessities like food, shelter, health and security to its people and ensures a life of dignity, self-esteem and upholds personal freedom for each and every individual of the society.

Consumption

This may sound as a microeconomic variable as consumption is done by individuals. When we talk about consumption in macroeconomic study we mean aggregate consumption that is the sum of expenditures made by the people on consumption in the economy. Consumption is related to income as higher income allows us to

increase and improve the consumption level. It also influences income as more demand for consumption goods will induce more production and more production will generate more income as more people have to be engaged in the production.

Investment

Investment is the addition to capital stock. Capital is often defined as the produced means of production. All the machines and other hardware used for production that enhance production efficiency are capital. The stock of money that can be used to purchase machines and build factories and workshops for production can also be termed as capital. When more money is employed to increase the number of machines or build new factories to expand production capacity, we say that investment has been made. Thus investment adds to the already existing capital stock and increases production capacity. Investment is important for the growth of an economy as it increases employment and generates income.

Employment

We are well aware of this term from our general understanding of the economy. Employment refers to the number of people engaged in productive activity that forms their livelihood. Employment is often expressed as the percentage of total workforce engaged in productive activity. Workforce is the percentage of the able bodied persons (usually people in the age group of 15 years to 65 years) that are willing to work. Parts of the workforce that have not been able to engage themselves in any productive activity to earn a living are termed as unemployed. It is the endeavour of a modern welfare state to provide meaningful employment to its workforce. Increase in the percentage of unemployed creates both economic and social problems.

Employment is of two types. When a part of the workforce is not willing to work at the existing wage rate, it is known as voluntary unemployment. On the contrary, when a part of the workforce is not getting jobs even at the existing wage rate, then we call it involuntary unemployment.

Open and closed economy

On the basis of the trade relations, a nation can be divided into two categories—open economy and closed economy. If the government of a country allows exchange of goods and services with other nations, then the economy is known as open economy. Thus an open economy is involved in export and import of goods and services with the other nations.

Conversely, if the government of a country does not allow the exchange of goods and services with other nations, then the economy is known as a closed economy. Closed economies cannot be involved in export and import with the rest of the world.

Price level

Price level in the macroeconomic sense does not refer to the price of a particular product or group of products. It generally refers to the aggregate price of all the goods and services produced in the economy. This aggregation is done by involving a suitable method of average. There are a number of price indices that are used to indicate the price level in the economy. The Wholesale Price Index (WPI) gives us the average of wholesale prices of the products in the economy. The Consumer Price Index (CPI) gives us the aggregate of prices of the consumer goods.

Inflation

Inflation refers to a situation of sustained rise in the price level. It is a situation 'when too much money is chasing too few goods'. During inflation, the general price level of the economy is increasing in a persistent manner over a considerable time period. Inflation is mainly of two types. When the inflation is created from a persistent excess demand, we can call it demand–pull inflation. On the other hand, if the inflation is created due to the rise in the cost of production, we call it cost push inflation.

The opposite of inflation is deflation which also has a long-term macroeconomic impact on the economy. Deflation refers to a situation of sustained fall in the general price level. In other words, if the general price level

in an economy is falling continuously for a long period of time, then we can say that the economy is experiencing deflation.

Interest rate

This is a term that comes quite often in common parlance. We know that when we keep money in the bank or lend it to someone we earn an interest annually. In the same way when we take a loan, we have to pay an interest on the principal and repay both the principal and the interest at the end of the term for which the loan has been taken. In macroeconomic sense, interest rate is the representative rate at which investment can be made. That is, it represents the average rate of interest that is to be paid by a person or a firm when it wants to make an investment by taking a loan. Thus, it is the price of the new capital that the producer wants to invest. This implies that when the interest rate is high, the price of capital increases and so the producers will not be induced to make new investments in capital. When interest rate falls, new investments can be made that expand production, create more employment and generate income. The central bank in the economy regulates the interest rate to maintain a steady growth rate and a stable price level.

Trade cycle or business cycle

Business cycle is mainly visible in the capitalistic economies. According to Keynes, 'A trade cycle or business cycle is composed of the periods of good trade characterized by the rising prices and low unemployment percentages coupled with the periods of bad trade characterized by falling prices and high unemployment percentages'. A business cycle is characterized by regular ups and downs of the economic activities at a regular interval. A business cycle occurs periodically and is synchronic in nature. In most of the cases, business cycles are international in character. Due to the existence of the trade relations, it spreads from one nation to another. A business cycle has four phases—depression, recovery, prosperity or boom and recession.

1.4 COMMODITIES OR GOODS ON THE BASIS OF END-USE/CLASSIFICATION OF COMMODITIES

We have already learned that the primary objective of studying macroeconomics is to understand the functioning of the economy as a whole and to explore the ways to foster growth, development and stability of the economy. To understand the economy, it is important to have a sound idea about the characteristics of goods and services that an economy produces. Let us take a look at various categories of goods produced in a typical economy.

Goods and services Goods are physical products that satisfy human wants. From food items to household gadgets, goods are used in our daily life for various purposes. Services also satisfy human wants but they are intangible, that is, they cannot be seen or touched as they do not have a physical existence. Some examples are medical services provided by doctors, educational services provided by teachers, legal advices provided by lawyers, beauty care provided by beauticians and so on.

Durable and non-durable goods Durable goods can be used more than once. Goods that can be used for quite some time are termed as durable goods such as buses, refrigerators, televisions, buildings and others. Non-durable goods can be used only once such as food items, writing paper, fertilizers, etc.

Economic and non-economic goods and services We do not pay any price to obtain goods that are abundantly available in nature like the air we breathe in, light that we get on sunny days, water for everyday use, etc. These are non-economic goods as they are freely available in nature. Goods which are scarce cannot be obtained for free. We have to pay a price for them. Any goods that we buy from the market are economic goods.

Consumption and capital goods

Consumption goods Goods used by individuals in an economy to satisfy their needs are called as consumer goods. These are finished goods and can be directly used after obtaining from the market. Refrigerators, air-conditioners, cereals, vegetables, etc. are examples of consumer goods.

Capital goods These are goods used by the producers to help in the production process. Capital goods are often termed as 'produced means of production'. For example, the loom used by the textile factory to weave clothes is a capital good. Sometimes that same good can act as a consumer good and even a capital good depending on its usage. The refrigerator in your house is a consumer good as you are using it for you household needs and not for any production. The refrigerator at the local sweet shop or ice-cream parlour is a capital good as it is helping the ice-cream or sweet producer in production and sale.

Intermediate and final goods

Intermediate goods A good that is not yet ready to use but requires value addition to get into final shape before it can be sold in the market is an intermediate good. The tyres used by automobile factories to fit into the vehicles produced by them are intermediate goods. The iron ore used by steel factories to produce steel sheets is also an intermediate good.

Final goods The finished products that do not require value addition but can be marketed to be used by the end user are called as final goods. Food items like bread, milk, pulses or gadgets like washing machines, mobile phones and computers are final goods. Often the same good can act as a final good as well as an intermediate good depending on the usage. The wheat flour that we purchase for our household is a final good as we are purchasing for the purpose of consumption. The baker purchases wheat flour to make breads, cakes and cookies and then sells them as final product. Thus, the flour used for cakes and cookies by the baker is an intermediate good.

Relationship between intermediate, capital and final goods Often students tend to confuse intermediate goods with capital goods. Though both of them are used in production, capital goods are not intermediate in nature. The washing machine used by a laundry is not an intermediate good. It is a finished final good that acts as a means of production. The cloth used by a garment manufacturer is an intermediate good as it will be sold in the market in finished form after stitching and adding buttons, laces, zips, etc. but the sewing machine used by the garment manufacturer is not an intermediate good as it will not be sold in the market after modification. It helps in stitching the fabric, which is the intermediate good, to produce the final good, the garment.

EXERCISES

1. Define Microeconomics.
2. What is Macroeconomics?
3. Distinguish between microeconomics and macroeconomics.
4. Mention two objectives of macroeconomics.
5. Name two variables connected to macroeconomics.
6. What do you mean by stock variable?
7. What is flow variable?
8. Distinguish between stock and flow.
9. Give examples of stock and flow variables.
10. What is national income?
11. What do you mean by Gross Domestic Product?
12. What is consumption?
13. What do you mean by investment?
14. Define an open economy.
15. What is a closed economy?
16. Distinguish between closed economy and open economy.
17. Distinguish between voluntary unemployment and involuntary unemployment.
18. What is economic growth?
19. What is economic development?
20. Distinguish between economic growth and economic development.
21. Define inflation.
22. What is deflation?
23. Define trade cycle or business cycle.
24. What is an interest rate?
25. Distinguish between wholesale price index and consumer price index.
26. What are the different phases of a business cycle?
27. What is consumption good?
28. What is a capital good?
29. Distinguish between capital and consumption goods.
30. Define an intermediate good.
31. What is a final good?
32. What is the difference between intermediate and finished goods?