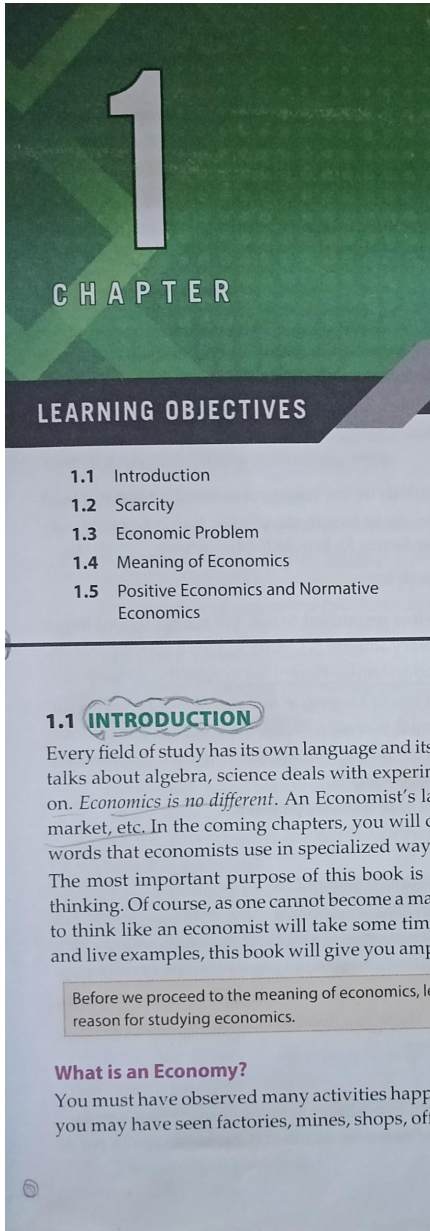


Name- Piyush Kumar Gupta
 Class-11. Section- Commerce
 Subject- Economics

S. N.	Date	LessonTopic	C.W.	H.W.
1	18/06/2025	Ch-1 Introduction		- What are the 3 economic problems? - Define : (i) Scarcity (ii) Economy

1.2 Explain vital processes of an Economy.

and organisations may be collectively called an economy. Such units and income and, at the same time, help to produce goods and services which.

An economy is a system which provides people, the means to work and

It is an organisation that provides living to the people. In this task, it makes resources to produce those goods and services that people want. For example, it consists of all sources of production in agriculture, industry, transport, banking, etc.

Vital Processes of an Economy

Economy is a system which provides living to the people. For this object necessary that every economy should undertake three economic activities.

1. Production
2. Consumption
3. Investment or Capital Formation.

These economic activities are known as the essentials or the vital processes.

On the basis of nature of economic activities, economies can be broadly classified into Centrally Planned Economy. It is given in Power Booster Section for knowledge enrichment.

Why Study Economics?

We go to a cinema hall to watch a movie. We go to a restaurant to eat. We are educated or to be able to earn a living. It means, every activity is conducted. Economics is studied because it enables us to understand different aspects. However, the main reason for study of economics can be simplified to a single word. We all know, human wants are more than the available resources. So, the problem of these scarce resources for the satisfaction of never ending human wants is concerned with selection of resources under conditions of scarcity.

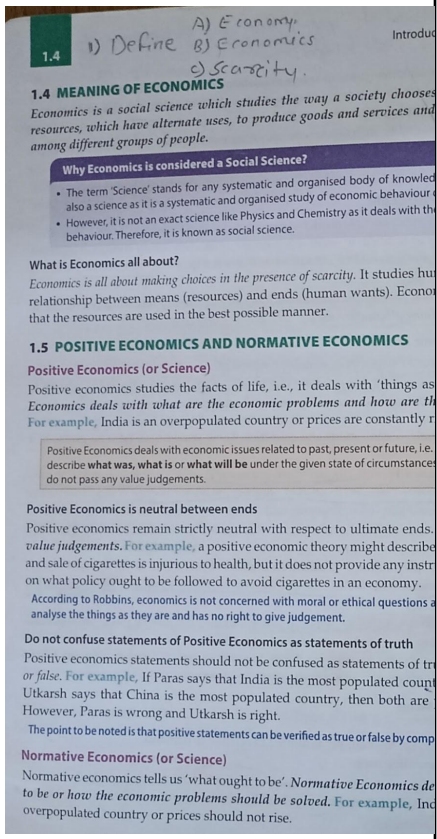
Let us now understand the concept of 'Scarcity', the root of all economic problems.

1.2 SCARCITY

Scarcity refers to the limitation of supply in relation to demand for a commodity. It refers to the situation, when wants exceed the available resources. As resources are readily available and society does not have enough resources to satisfy all wants, Scarcity is universal, i.e. every individual, organisation and economy face scarcity of resources calls for economizing of resources. Economizing means making optimum use of the available resources. There is a need to economize to satisfy our unlimited wants out of limited resources.

Scarcity is not the only problem!

- Limitation of resources is not the only problem. In addition to being limited, resources have alternate (different) uses. Alternate use of resources means that more than one use.

2	19/06/2025	Ch-1 Introduction	 1.4 MEANING OF ECONOMICS Economics is a social science which studies the way a society chooses resources, which have alternate uses, to produce goods and services and among different groups of people. Why Economics is considered a Social Science? - The term 'Science' stands for any systematic and organised body of knowledge also a science as it is a systematic and organised study of economic behaviour. - However, it is not an exact science like Physics and Chemistry as it deals with the behaviour. Therefore, it is known as social science. What is Economics all about? Economics is all about making choices in the presence of scarcity. It studies the relationship between means (resources) and ends (human wants). Economics deals with the resources are used in the best possible manner. 1.5 POSITIVE ECONOMICS AND NORMATIVE ECONOMICS Positive Economics (or Science) Positive economics studies the facts of life, i.e., it deals with 'things as they are'. Economics deals with what are the economic problems and how are they solved. For example, India is an overpopulated country or prices are constantly rising. Positive Economics deals with economic issues related to past, present or future, i.e., describe what was, what is or what will be under the given state of circumstances. It does not pass any value judgements. Positive Economics is neutral between ends Positive economics remain strictly neutral with respect to ultimate ends, value judgements. For example, a positive economic theory might describe the production and sale of cigarettes is injurious to health, but it does not provide any instruction on what policy ought to be followed to avoid cigarettes in an economy. According to Robbins, economics is not concerned with moral or ethical questions and only analyse the things as they are and has no right to give judgement. Do not confuse statements of Positive Economics as statements of truth Positive economics statements should not be confused as statements of truth or false. For example, If Paras says that India is the most populated country and Utkarsh says that China is the most populated country, then both are wrong. However, Paras is wrong and Utkarsh is right. The point to be noted is that positive statements can be verified as true or false by comparison with facts. Normative Economics (or Science) Normative economics tells us 'what ought to be'. Normative Economics deals with what should be or how the economic problems should be solved. For example, India is an overpopulated country or prices should not rise.	1. Differentiate between microeconomics and macroeconomics. 2. Differentiate between normative economics and positive economics.
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3

20/06/2025

Ch-1 Introduction

	1.6	Intro																									
	<i>Microeconomics is that part of economic theory, which studies the behaviour of individual units of an economy. For example, Individual income, individual output, etc. Its main tools are Demand and Supply.</i> Macroeconomics The term 'macro' has been derived from the Greek word 'makros' which means 'large'. Macroeconomics deals with overall performance of the economy. It is concerned with the problems of the economy like inflation, unemployment, poverty, etc. <i>Macroeconomics is that part of economic theory which studies the behaviour of the economy as a whole. For example, National income, aggregate output, etc. Its main tools are Aggregate Demand and Aggregate Supply.</i> Micro Vs Macro - In Microeconomics, the letter 'I' stands for 'Individuals', i.e. behaviour of individuals. - In Macroeconomics, the letter 'A' stands for 'Aggregates', i.e. it is a whole. Let us discuss the detailed differences between the two branches of economics. Difference between Microeconomics and Macroeconomics <table> <tr> <th>Basis</th><th>Microeconomics</th><th>Macroeconomics</th></tr> <tr> <td>Meaning</td><td>Microeconomics is that part of economic theory which studies the behaviour of individual units of an economy.</td><td>Macroeconomics is that part of economic theory which studies the behaviour of the economy as a whole.</td></tr> <tr> <td>Tools</td><td>Demand and Supply.</td><td>Aggregate Demand and Aggregate Supply.</td></tr> <tr> <td>Basic Objective</td><td>It aims to determine price of a commodity or factors of production.</td><td>It aims to determine the level of employment and output.</td></tr> <tr> <td>Degree of Aggregation</td><td>It involves limited degree of aggregation. For example, market demand is derived by aggregating individual demands of all buyers in the particular market.</td><td>It involves high degree of aggregation. Market demand is derived by aggregating individual demands of all buyers in the economy.</td></tr> <tr> <td>Basic Assumptions</td><td>It assumes all the macro variables to be constant, i.e., it assumes that national income, consumption, savings, etc. are constant.</td><td>It assumes that the decisions of individuals are aggregated to form the aggregate demand and supply.</td></tr> <tr> <td>Other Name</td><td>Microeconomics is also known as 'Price Theory' as it is primarily concerned with determination of prices of commodities and factors of production.</td><td>Macroeconomics is also known as 'Income and Employment Theory' as it is primarily concerned with determination of national income and employment.</td></tr> <tr> <td>Examples</td><td>Individual income, individual output, individual demand, etc.</td><td>National income, aggregate output, aggregate demand, etc.</td></tr> </table> Interdependence of Microeconomics and Macroeconomics Economics is a single subject and the analysis of an economy is a single process. Microeconomics and Macroeconomics are two branches of economics which are interdependent on each other.	Basis	Microeconomics	Macroeconomics	Meaning	Microeconomics is that part of economic theory which studies the behaviour of individual units of an economy.	Macroeconomics is that part of economic theory which studies the behaviour of the economy as a whole.	Tools	Demand and Supply.	Aggregate Demand and Aggregate Supply.	Basic Objective	It aims to determine price of a commodity or factors of production.	It aims to determine the level of employment and output.	Degree of Aggregation	It involves limited degree of aggregation. For example, market demand is derived by aggregating individual demands of all buyers in the particular market.	It involves high degree of aggregation. Market demand is derived by aggregating individual demands of all buyers in the economy.	Basic Assumptions	It assumes all the macro variables to be constant, i.e., it assumes that national income, consumption, savings, etc. are constant.	It assumes that the decisions of individuals are aggregated to form the aggregate demand and supply.	Other Name	Microeconomics is also known as 'Price Theory' as it is primarily concerned with determination of prices of commodities and factors of production.	Macroeconomics is also known as 'Income and Employment Theory' as it is primarily concerned with determination of national income and employment.	Examples	Individual income, individual output, individual demand, etc.	National income, aggregate output, aggregate demand, etc.		
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1. What are the 3 Central Problems of economy?
2. Define the problem of what to produce and its 2 types.
3. What do you mean by the problem of for whom to produce?

			1.8 28/06/24 Intro 1.7 CENTRAL PROBLEMS OF AN ECONOMY Production, distribution and disposition of goods and services are the basic activities of life. In the course of these activities, every society has to face scarcity of resources. This scarcity, every society has to decide how to allocate the scarce resources. These are the <u>Central Problems, that are faced by every economy</u>: 1. What to produce 2. How to produce 3. For whom to produce These problems are called <u>central problems</u> because these are the most basic problems and all other problems revolve around them. These 3 problems are studied under the problem of 'Allocation of Resources'. Allocation of Resources (Studied under Microeconomics) Allocation of resources refers to the problem of assigning the scarce resources to the maximum wants of the society are fulfilled. As resources are limited in supply and human wants, it is important to economize their use and utilise them in the most efficient manner. The problem of allocation of resources is studied under 3 heads: (1) What to produce; (2) How to produce; (3) For whom to produce. In nutshell, an economy has to allocate its resources and choose from different techniques of production (How to produce), select from different techniques of production (How to produce), and in the end, who will consume the goods (For whom to produce). 1. What to Produce This problem involves selection of goods and services to be produced. Every economy has limited resources and cannot produce all the goods. More of one good or service usually means less of another. For example, production of more sugar is possible only by reducing the production of other goods. Production of more war goods is possible only by reducing the production of consumer goods. So, on the basis of the importance of various goods, an economy should decide what goods should be produced and in what quantities. This is a problem of selection among different goods. The problem of 'What to produce' has two aspects: (i) <u>What possible commodities to produce</u>: An economy has to decide which goods (rice, wheat, clothes, etc.) and which of the capital goods (machines, tools, etc.) are to be produced. In the same way, economy has to decide which consumer goods (bread, butter, etc.) and war goods (guns, tanks, etc.) are to be produced. (ii) <u>How much to produce</u>: After deciding the goods to be produced, the economy has to decide the quantity of each commodity, that is selected. It means, it has to decide the quantity to be produced, of consumer and capital goods, civil and military goods. As this problem has two aspects, it is also termed as "What to Produce and in what quantity".	
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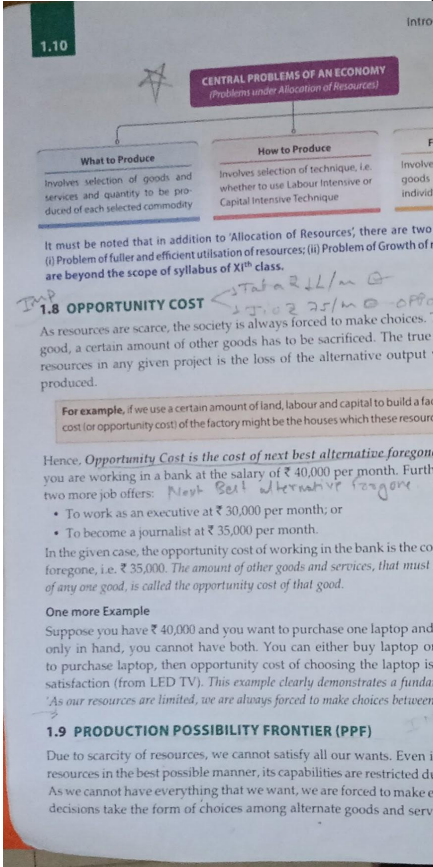
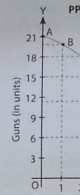
4	23/06/2025	Ch-1 Introduction		1. What do you mean by : (i) MOC(ii) MRT 2. Differentiate between attainable and unattainable combinations. 3. Unsolved Q.No. 2. 4. Unsolved Q.No.3.
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Table 1.1 shows the various possibilities of guns and butter. This data is given in Fig. 1.1.

- If the economy uses all its resources to produce only guns, then maximum of 21 units of guns and no butter can be produced (point 'A').
- On the other hand, if all resources are used for butter, then maximum 6 units of butter and no guns can be produced (point 'G').
- In between, there are various possibilities with different combinations of guns and butter.
- When points A, B, C, D, E, F and G are joined, we get a curve AG, known as 'Production Possibility Frontier'. AG curve shows the maximum limit of production of guns and butter.



Marginal Opportunity Cost (MOC)

MOC refers to the number of units of a commodity sacrificed to gain one additional unit of another commodity. In case of PPF, MOC is always increasing, i.e. more and more have to be sacrificed to gain an additional unit of another commodity.

Why Increasing MOC operates?

Increasing MOC operates because productivity and efficiency of factors of production are shifted from one use to another. Let us understand this with the help of an example. An economy produces only two goods (say, guns and butter). A worker is employed in the production of guns because he is best suited for it. If the economy decides to reduce production of guns and increase production of butter, then the worker will be transferred to the production of butter. As that efficient worker is now in the production of butter instead of guns, his productivity in the production of butter will increase. As a result, his productivity in the production of guns will decrease and MOC will increase.

Marginal Rate of Transformation (MRT)

MRT is the ratio of number of units of a commodity sacrificed to gain an additional unit of another commodity. $MRT = \frac{\Delta \text{Units Sacrificed}}{\Delta \text{Units Gained}}$. In the given example of guns and butter, MRT measures the slope of the Production Possibility Frontier.

MRT measures the slope of Production Possibility Frontier.

Example of MRT

According to Table 1.1, 20 units of guns and 1 unit of butter (i.e. 20G + 1B) can be produced by utilising the resources fully and efficiently. If the economy decides to produce 18 units of guns and 2 units of butter (i.e. 18G + 2B), it has to cut down production of guns by 2 units. In the given case, 2G is the sacrifice for 1B, i.e. MRT is 2G:1B.

5

24/06/2025

Ch-1 Introduction

1.14

2. **Inefficient utilisation of resources:** However, the actual production capabilities. If there is wastage or inefficient utilisation of resources, an economy can operate at any point inside the PPF (like E).

Unattainable Combinations: With the given amount of available resources, an economy can never operate at any point outside the PPF (like F). For "An economy always produces on, but not inside, a PPF", refer HOTS.

PPF and MRT

We can measure MRT on the PPF. For example, MRT between the possibilities D and E is equal to DH/HE and between E and F, it is equal to EI/IF and so on.

We know, PPF is concave shaped curve. The slope of PPF is a measure of the MRT. Since the slope of a concave curve increases as we move downwards along the curve, the MRT also rises as we move downwards along the curve.

Can PPF be a straight line?

PPF can be a straight line if we assume that MRT is constant, i.e. same amount of a commodity is sacrificed to gain an additional unit of another commodity. It is possible only when we assume that all the resources are equally efficient in production of all goods. In such case, PPF will be a straight line as shown in Fig. 1.4.

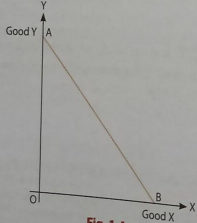


Fig. 1.4

Can PPF be Convex to the Origin?

PPF can be convex to the origin if MRT is decreasing, i.e. less and less is sacrificed to gain an additional unit of another commodity. In such case, PPF will be a convex shaped curve as shown in Fig. 1.5.

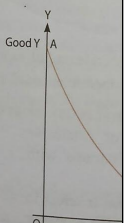


Fig. 1.5

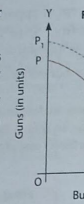
It must be noted that both these situations (i.e. PPF being a straight line or convex) can arise, as MRT always increases. So, PPF is always concave shaped.

- 1. Differentiate between inward shift and rightward shift.
- 2. What is rotation of PPF on x-axis?
- 3. What is rotation of PPF on y axis?

1. Shift in PPF

The PPF can shift either towards *right* or towards *left*, when there is change in resources or technology with respect to both the goods.

- (i) **Rightward Shift in PPF:** When there is "Advancement or Upgradation of Technology" or/and "Growth of Resources" in respect to both the goods, then PPF will shift to the right. For example, if there is increase in resources for production of butter and guns, we can produce more of both the goods. In such case, existing PPF (PP) will shift to the right, represented by P_1P_1 in Fig. 1.7.



"Growth of Resources" take place when

- Quantity of Resources increases, like: (i) Discovery of new natural resources; (ii) Increase in labour force.
- Quality of Resources increases, like: (i) "Skill Development of Human Resources" through various schemes like Pradhan Mantri Kaushal Vikas Yojana; (ii) "Clean India Mission" (Swachh Bharat Mission).

- (ii) **Leftward Shift in PPF:** PPF will shift towards left, when there is a technological degradation and/or decrease in resources with respect to both the goods. For example, destruction of resources in an earthquake will reduce the productive capacity and as a result, PPF will shift to the left from PP to P_1P_1 (Fig. 1.8).

For, "How PPF will be affected by massive unemployment", refer HOTS.

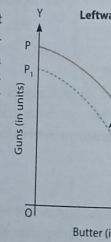
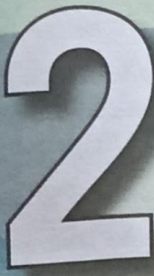


Fig. 1.7

2. Rotation of PPF

It happens when there is change in productive capacity (resource) for *only one good*. The rotation can be either for the commodity on the Y-axis.

- (i) **Rotation for commodity on the X-axis:** When there is a technological advancement or increase in resources for production of the commodity on the X-axis, then PPF will rotate from AB to AC .

6	25/06/2025	Ch-2 Consumers Equilibrium	 LEARNING OBJECTIVES 2.1 Introduction 2.2 Cardinal Utility Approach 2.3 Concept of Utility 2.4 Law of Diminishing Marginal Utility 2.5 Consumer's Equilibrium 2.1 INTRODUCTION A consumer is the main decision-maker who chooses between different goods and services for satisfaction. He purchases goods to be purchased in order to get satisfaction from spending his income. A consumer is generally understood as an individual or a group of individuals or institutions. The aim of this chapter is to make you understand the concept of consumer's equilibrium and the consumption of goods and services. A consumer has to follow some principles while purchasing goods. The two main approaches to study consumer's equilibrium are: 1. Cardinal Utility Approach 2. Ordinal Utility Approach (Marginal Utility Approach)	1. Who is the consumer? 2. What are the two approaches of measuring consumer's equilibrium?
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Do Consider it

1. The utility derived from the first unit of a commodity is known as initial utility. The utility derived from the first ice-cream is termed as the initial utility.
2. Total utility is zero at zero level of consumption.

Marginal Utility (MU)

Marginal utility is the additional utility derived from the consumption of one more unit of the given commodity. It is the utility derived from the last unit of the commodity.

As per given example, when 3rd ice-cream is consumed, TU increases by 10 units. The additional 10 units from the 3rd ice-cream is the MU. In the next example, the additional utility is added to total utility by consuming one more unit of ice-cream.

MU can be calculated as: $MU_n = TU_n - TU_{n-1}$

Where: MU_n = Marginal utility from n^{th} unit; TU_n = Total utility from n units;

TU_{n-1} = Total utility from $n - 1$ units; n = Number of units of consumption

MU of 3rd ice-cream will be: $MU_3 = TU_3 - TU_2 = 46 - 36 = 10$ utils

One More way to Calculate MU

MU is the change in TU when one more unit is consumed. However, if the number of units consumed is more than one, then MU can also be calculated as:

$$MU = \frac{\text{Change in Total Utility}}{\text{Change in number of Units}} = \frac{\Delta TU}{\Delta n}$$

Total Utility is Summation of Marginal Utilities

Total utility can also be calculated as the sum of marginal utilities.

$TU_n = MU_1 + MU_2 + MU_3 + \dots + MU_n$ or simply,

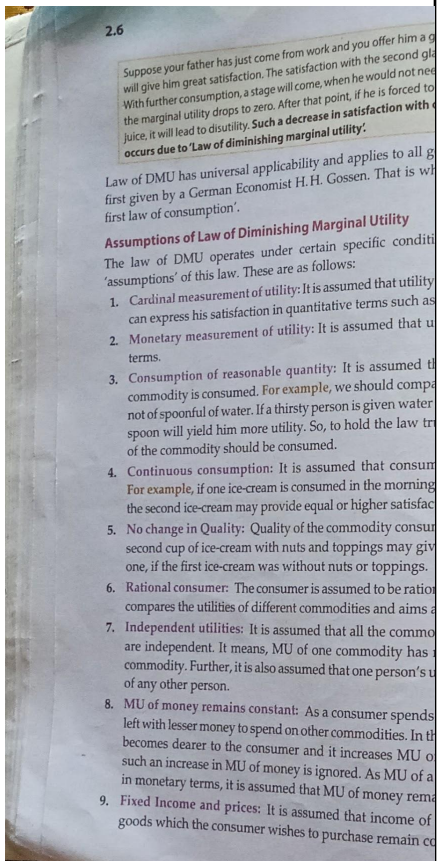
$$TU = \sum MU$$

The concepts of TU and MU can be better understood from the following table.

Table 2.1: TU and MU

Ice-creams Consumed	Marginal Utility (MU)	Total Utility (TU)
1	20	20
2	16	36
3	10	46
4	4	50
5	0	50
6	-6	44

In Fig. 2.1, units of ice-cream are shown along the X-axis and TU and MU are shown along the Y-axis. MU is positive and TU is increasing till the 4th ice-cream. At the 5th ice-cream, MU is zero and TU is maximum. This point is known as the point of saturation.

7	26/06/2025	Ch-2 Consumers Equilibrium	 2.6 Suppose your father has just come from work and you offer him a glass of juice. He will give you great satisfaction. The satisfaction with the second glass will be less. With further consumption, a stage will come, when he would not need more juice. At that point, the marginal utility drops to zero. After that point, if he is forced to consume more juice, it will lead to disutility. Such a decrease in satisfaction with consumption occurs due to 'Law of diminishing marginal utility'. Law of DMU has universal applicability and applies to all goods and services. It was first given by a German Economist H. H. Gossen. That is why it is called the 'first law of consumption'. Assumptions of Law of Diminishing Marginal Utility The law of DMU operates under certain specific conditions. These are called 'assumptions' of this law. These are as follows: 1. Cardinal measurement of utility: It is assumed that utility can be expressed in quantitative terms such as 'units'. 2. Monetary measurement of utility: It is assumed that utility can be expressed in monetary terms. 3. Consumption of reasonable quantity: It is assumed that the commodity is consumed in a reasonable quantity. For example, if a thirsty person is given a spoonful of water, it will yield him more utility. So, to hold the law true, the quantity of the commodity should be consumed. 4. Continuous consumption: It is assumed that consumption is continuous. For example, if one ice-cream is consumed in the morning, the second ice-cream may provide equal or higher satisfaction. 5. No change in Quality: Quality of the commodity consumed should remain the same. For example, a second cup of ice-cream with nuts and toppings may give more satisfaction than the first cup without nuts or toppings. 6. Rational consumer: The consumer is assumed to be rational and compares the utilities of different commodities and aims to maximize his satisfaction. 7. Independent utilities: It is assumed that all the commodities are independent. It means, MU of one commodity has no relation with the MU of another commodity. Further, it is also assumed that one person's utility is not affected by the utility of any other person. 8. MU of money remains constant: As a consumer spends more money, he is left with lesser money to spend on other commodities. In this case, the commodity becomes dearer to the consumer and it increases MU of money. Such an increase in MU of money is ignored. As MU of a commodity is measured in monetary terms, it is assumed that MU of money remains constant. 9. Fixed Income and prices: It is assumed that income of the consumer and prices of goods which the consumer wishes to purchase remain constant.	1. Write down all the assumptions of law of DMU. 2. Explain consumer's equilibrium with the help of graph and schedule. 3. Explain consumer's equilibrium in case of 2 goods.
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1. Consumer spends his entire income on a Single Commodity
2. Consumer spends his entire income on Two Commodities

The Law of DMU can be used to explain consumer's equilibrium. Therefore, all the assumptions of Law of DMU are taken at equilibrium in case of single commodity.

1. Price of the given commodity;
2. Expected utility (Marginal Utility) from each successive unit.

- We know, marginal utility is expressed in utils and price is expressed in dollars. However, marginal utility and price can be effectively compared if they are expressed in the same units. Therefore, marginal utility in utils is expressed in terms of dollars.

MU of one rupee is the extra utility obtained when an additional rupee is added to the bundle. Since the utility is subjective and differs from person to person, it is assumed that the MU of one rupee, in terms of satisfaction from bundle, is the same for all persons.

Consumer in consumption of single commodity (say, x) will be
Marginal Utility (MU_x) is equal to Price (P_x) paid for the comm

8	28/06/2025	Ch-2 Consumers Equilibrium	2.12 Consumer's Equilibrium: Two Commodities Case Fig. 2.3a In the diagram, MU from commodity 'x' is taken on OY-axis and MU from commodity 'y' is taken on O₁Y₁-axis. MU_x and MU_y are the MU curves for commodity 'x' and 'y' respectively. From Table 2.4 and Fig. 2.3a, it is obvious that the consumer will consume 3 units of commodity 'x' and 2 units of commodity 'y' to reach the equilibrium. At this combination, the marginal utility of commodity 'x' is 12 utils and the marginal utility of commodity 'y' is 12 utils. The total satisfaction of 74 utils will be obtained when the consumer consumes 3 units of 'x' and 2 units of 'y'. It reflects the state of consumer's equilibrium. If the consumer consumes more or less than 3 units of 'x' and 2 units of 'y', total satisfaction will be less than 74 utils. (i) MU of last rupee spent on each commodity is same; and (ii) MU falls as consumption increases. It happens at point E when consumer buys 3 units of 'x' and 2 units of 'y'. • MU from last rupee (i.e. 5th rupee) spent on commodity 'y' is 12 utils as given by last rupee (i.e. 4th rupee) spent on commodity 'x'. • MU of each commodity falls as consumption increases. The total satisfaction of 74 utils will be obtained when the consumer consumes 3 units of 'x' and 2 units of 'y'. It reflects the state of consumer's equilibrium. If the consumer consumes more or less than 3 units of 'x' and 2 units of 'y', total satisfaction will be less than 74 utils. Limitation of Utility Analysis In the utility analysis, it is assumed that utility is cardinally measurable in exact unit. However, utility is a feeling of mind and therefore it cannot be expressed in figures. But, their discussion is beyond the scope of this chapter.	1. Explain ordinal measure of utility. 2. Define : (i) Indifference curve (ii) Indifference map 3. Differentiate between budget line and budget set.
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2.14

	3
R	4
S	5
T	

As seen in the schedule, consumer is indifferent between five combinations of apple and banana. Combination 'P' (1A + 15B) gives the same utility as (2A + 10B), (3A + 6B) and so on. When these combinations are represented graphically and joined together, we get an indifference curve 'IC₁' as shown in Fig. 2.4.

In the diagram, apples are measured along the X-axis and bananas on the Y-axis. All points (P, Q, R, S and T) on the curve show different combinations of apples and bananas. These points are joined with the help of a smooth curve, known as indifference curve (IC₁). An indifference curve is the locus of all the points, representing different combinations, that are equally satisfactory to the consumer.

Every point on IC₁ represents an equal amount of satisfaction. A consumer is said to be indifferent between the combinations located

The combinations P, Q, R, S and T give equal satisfaction to the consumer among them. These combinations are together known as 'Indifference Curve'.

Important Points

- **Increase of one Good requires Decrease of other good** : On an Indifference Curve, each combination of two goods gives equal satisfaction. If a consumer increases the consumption of one good, then consumption of the other good must be decreased, so as to maintain same level of satisfaction. For example, when consumer moves from combination P to Q, consumption of apples increases by 1 unit, while that of Bananas decreases by 5 units.
- **Why Does it Happen?** It happens because if consumption of bananas is not decreased or vice-versa, then in sum the consumer gets more quantity of 1 good, which means more satisfaction. This is against the basic assumption of indifference curve, which is that the consumer gets the same satisfaction.

One More Observation: As the quantity of one good (Apples in our example) increases, the quantity of the other good (say, bananas) not only decreases but it decreases at a decreasing rate. For example, if a consumer moves from combination P to Q, he is willing to give up 5 bananas for 1 more apple. If he moves from Q to R, he is willing to give up ONLY 4 bananas to obtain 1 more apple. This is known as the 'Law of Diminishing Marginal Rate of Substitution' and is discussed later in the chapter under the heading 'Why the Indifference Curve is Convex to the Origin'.

It must be noted that in mathematical terms, MRS should always be negative (as one good is sacrificed to get another). However, for analysis, absolute

The concept of MRS_{AB} is explained through Table 2.6 and Fig.

Table 2.6: MRS between Apple and Banana

Combination	Apples (A)	Banana (B)	MRS_{AB}
P	1	15	—
Q	2	10	5B:1A
R	3	6	4B:1A
S	4	3	3B:1A
T	5	1	2B:1A

As seen in the given schedule and diagram, when consumer moves from P to Q, he sacrifices 5 bananas for 1 apple. Thus, MRS_{AB} comes out to be 5:1. Similarly, from Q to R, MRS_{AB} is 4:1. In combination T, the sacrifice falls to 2 bananas for 1 apple. In other words, the MRS of apples for bananas is diminishing or slope of Indifference (MRS) is continuously declining as we move downwards along the shape of the indifference curve.

Why MRS diminishes?

MRS falls because of the law of diminishing marginal utility. In the bananas, Combination 'P' has only 1 apple and, therefore, apples are more valuable than bananas. Due to this, the consumer is willing to give up more bananas for 1 apple. But as he consumes more and more of apples, his marginal utility of apples is declining. As a result, he is willing to give up less and less of bananas for an additional apple.

Assumptions of Indifference Curve

The various assumptions of indifference curve are:

1. **Two commodities:** It is assumed that the consumer has a preference for two commodities, X and Y , of which it is to be spent on the two goods, given constant prices.
2. **Not Satety:** It is assumed that the consumer has not reached a state of satiation. A consumer always prefers more of both commodities, i.e. higher indifference curve to get higher and higher satisfaction. It is presumed to be monotonic, i.e. a consumer always prefers a bundle of goods that offers him a higher level of satisfaction.
3. **Ordinal Utility:** Consumer can rank his preferences on the basis of each bundle of goods.