IMPORTANT TOPICS FOR MANAGERIAL ECONOMICS END TERM EXAM

Q. Branches of Economics.

A. Economics is broadly divided into two main branches:
Microeconomics and **Macroeconomics**. While they focus on different aspects of economic activity, both are essential for a comprehensive understanding of how economies function.

Microeconomics studies how individual consumers and businesses make decisions about allocating resources. Economists, whether individuals, households, or businesses, can analyse how these entities respond to price changes and why they charge for behaviour at particular price levels. It focuses on:

- **Supply and Demand**: Analyzing how prices and quantities of goods and services are determined in individual markets.
- **Consumer Behaviour**: Understanding how individuals make decisions to allocate their limited resources among various goods and services.
- **Production and Costs**: Studying how firms decide on the optimal production levels and the combination of resources to minimize costs and maximize profits.
- **Market Structures**: Exploring different types of market environments, such as perfect competition, monopoly, monopolistic competition, and oligopoly, and their implications on pricing and output.

Macroeconomics is the branch of economics that studies the behaviour and performance of the economy as a whole unit. Its main focus is on repeating economic cycles and broader economic growth and development. It addresses broader economic factors, including:

- **Gross Domestic Product (GDP)**: Measuring the total value of all goods and services produced within a country over a specific period.

- **Unemployment Rates**: Assessing the percentage of the labor force that is unemployed and actively seeking employment.
- **Inflation**: Monitoring the rate at which the general level of prices for goods and services rises, eroding purchasing power.
- **Fiscal and Monetary Policies**: Evaluating government spending and taxation (fiscal policy) and central bank actions affecting money supply and interest rates (monetary policy) to influence economic performance.

Q. Difference between Microeconomics and Macroeconomics.

A. differences between **Microeconomics** and **Macroeconomics**:

1. **Scope of Study**:
    - **Microeconomics**: Focuses on individual economic units, such as consumers, firms, and specific markets.
    - **Macroeconomics**: Examines the economy as a whole, including aggregate measures like national income and overall employment levels.
2. **Key Focus Areas**:
    - **Microeconomics**: Analyses supply and demand in individual markets, pricing mechanisms, and consumer behaviour.
    - **Macroeconomics**: Studies broad economic factors such as GDP, inflation rates, and fiscal and monetary policies.
3. **Decision-Making Analysis**:
    - **Microeconomics**: Investigates how individual entities make decisions based on resource limitations and market conditions.
    - **Macroeconomics**: Assesses how collective decisions impact national and global economic trends.
4. **Policy Implications**:

- **Microeconomics**: Informs policies that affect specific sectors or markets, such as regulations on monopolies or subsidies for particular industries.
- **Macroeconomics**: Guides policies aimed at managing economic growth, controlling inflation, and reducing unemployment on a national or global scale.

Q. Define Equilibrium

A. **Equilibrium** refers to a state where market supply and demand balance each other, resulting in stable prices and quantities. At this point, the quantity of goods or services that consumers are willing to purchase equals the quantity that producers are willing to supply, leading to no inherent tendency for change. This balance ensures that markets operate efficiently, with resources allocated optimally.

Q. What are the factors that determine demand for goods and services?

A. **Factors that Determine Demand for Any Goods and Services**

1. **Price of the Product**: A higher price generally leads to lower demand, while a lower price tends to increase demand.
2. **Income of Consumers**: Higher incomes generally lead to increased demand for goods and services.
3. **Consumer Preferences and Tastes**: Consumer preferences and tastes play a crucial role in determining demand.
4. **Availability and Prices of Substitutes**: The availability and prices of substitute goods can affect demand.
5. **Population and Demographics**: The size and composition of the population impact demand.

Q. What are the factors that determine supply for goods and services?

A. **Factors that Determine Supply for Any Goods and Services**

1. **Cost of Production**: The cost of producing goods and services, including factors such as labour, raw materials, and energy, directly affects supply.
2. **Technological Advances**: Technological advancements can impact the efficiency and productivity of production processes, influencing supply.
3. **Prices of Inputs**: The prices of inputs used in production, such as wages and fuel costs, can influence supply.
4. **Government Policies and Regulations**: Government policies and regulations, such as taxes, subsidies, and trade restrictions, can affect the supply of goods and services.

Q. What are the key concepts of utility in economics?

A. **Utility Definition** – It is a measure of satisfaction an individual gets from the consumption of the commodities. In other words, it is a measurement of usefulness that a consumer obtains from any good. A utility is a measure of how much one enjoys a movie, favourite food, or other goods. It varies with the amount of desire.

Measurement of Utility

Measurement of a utility helps in analysing the demand behaviour of a customer. It is measured in two ways

1. **Cardinal Approach**

   In this approach, one believes that it is measurable. One can express his or her satisfaction in cardinal numbers i.e., the quantitative numbers such as 1, 2, 3, and so on. It tells the preference of a customer in cardinal measurement. It is measured in utils.
2. **Ordinal Approach**

In this approach, one believes that it is comparable. One can express his or her satisfaction in ranking. One can compare commodities and give them certain ranks like first, second, tenth, etc. It shows the order of preference. An ordinal approach is a qualitative approach to measuring a utility.

Utility includes:

- **Total Utility (TU)**: **total utility** represents the cumulative satisfaction or benefit a consumer derives from consuming a certain quantity of goods or services. It quantifies the overall pleasure obtained from all units consumed. For example, if eating one slice of pizza provides 10 units of satisfaction (utils), and a second slice adds another 8 utils, the total utility from consuming both slices would be 18 utils.
- **Marginal Utility (MU)**: Marginal utility refers to the additional satisfaction gained from consuming one more unit of a good or service. It measures the change in total utility resulting from this extra unit. Continuing with the pizza example, if the third slice adds 5 utils, then the marginal utility of the third slice is 5 utils.

Law of Diminishing Marginal Utility

The **Law of Diminishing Marginal Utility** states that as a consumer consumes more units of a particular good or service, the additional satisfaction (marginal utility) gained from each additional unit decreases over time. While the total utility may still increase, it does so at a declining rate, and eventually, consuming more units may lead to zero or even negative marginal utility

Implications of the Law of Diminishing Marginal Utility

The following are the implications of the Law of Diminishing Marginal Utility:

1. **Consumer Demand**:
   The law of diminishing marginal utility helps explain why consumers demand a variety of goods. As consumers consume more of a particular good, the marginal utility derived from each additional

unit diminishes, leading to a desire for different goods to maintain or increase overall satisfaction.

2. **Pricing**:
   The law of diminishing marginal utility also has implications for pricing strategies. Since consumers experience diminishing satisfaction from consuming additional units of a good, they are generally willing to pay less for each successive unit. Businesses often use this concept to determine pricing tiers or discounts to maximize consumer demand.
3. **Resource Allocation**:
   The law of diminishing marginal utility influences resource allocation decisions in society. As resources are limited, the diminishing marginal utility suggests that allocating resources toward goods that provide higher initial utility (such as basic needs) may result in greater overall satisfaction for the population.
4. **Consumer Surplus**:
   The law of diminishing marginal utility contributes to the concept of consumer surplus. Consumer surplus is the difference between what a consumer is willing to pay for a good and the actual price they pay. As marginal utility diminishes with each unit consumed, consumers may experience a surplus of satisfaction or value compared to what they actually paid for the goods.
5. **Optimal Consumption**:
   The law of diminishing marginal utility guides consumers toward optimal consumption decisions. Consumers aim to allocate their limited resources to maximize overall utility by consuming goods up to the point where the marginal utility per dollar spent is equal across different goods.

Q. What is an indifference curve and what are its key properties in economics?

A. An **indifference curve** is a graphical representation used in economics to show different combinations of two goods or services that give a consumer the same level of satisfaction or utility. The consumer is said to be "indifferent" between these combinations because they all result in the same level of utility.

Properties of Indifference Curves

1. **Downward Sloping**:
   Indifference curves are downward sloping, indicating that as the quantity of one good increases, the quantity of the other good decreases (assuming all else remains constant). This reflects the trade-off between the two goods, where an increase in one good requires a decrease in the other to maintain the same level of utility.
2. **Convex to the Origin**:
   Indifference curves are convex to the origin, reflecting the concept of **diminishing marginal rate of substitution (DMRS)**. As the consumer consumes more of one good, they are willing to give up fewer units of the other good to maintain the same level of satisfaction.
3. **Cannot Intersect**:
   Indifference curves cannot intersect. Each curve represents a different level of utility. If two curves were to intersect, it would imply that the same combination of goods provides two different levels of utility, which contradicts the concept of indifference.
4. **Higher Curve = Higher Utility**:
   Higher indifference curves represent higher levels of utility. Points on a higher curve indicate combinations of goods that are preferred to those on a lower curve, meaning the consumer experiences more satisfaction with the higher combination.
5. **Indifference Curves Do Not Touch Axes**:
   Indifference curves do not touch either axis, indicating that the consumer has positive preferences for both goods and does not

prefer the complete absence of either good. This suggests that the consumer values both goods and would not want to consume zero units of either.

Q. What are the different types of goods?

A. **1. Normal Goods**

- **Definition**: Normal goods are those for which demand increases as consumer income rises. When people have more money, they are able to buy more of these goods because they can afford them. As income grows, consumers tend to spend more on normal goods, increasing their demand.
- **Example**: Clothing, electronics, and dining out. If people's incomes increase, they may buy more high-end clothing, gadgets, or go to restaurants more often.

2. Inferior Goods

- **Definition**: Inferior goods are goods for which demand decreases as consumer income rises. These are often cheaper alternatives to other goods, and as consumers' financial situation improves, they tend to buy less of these goods in favor of higher-quality alternatives.
- **Example**: Instant noodles or public transportation. As people earn more money, they may choose to eat at restaurants instead of buying cheap instant food or prefer using taxis over buses.

3. Giffen Goods

- **Definition**: Giffen goods are a unique and rare case of inferior goods where demand increases as the price of the good rises, which contradicts typical market behavior. This happens because the good is a necessity, and when the price increases, people can no longer afford other alternatives and end up buying more of the Giffen good.
- **Example**: Basic staple foods like bread or rice in impoverished regions. If the price of bread rises, people may buy more of it, even

though it's more expensive, because they can no longer afford better alternatives.

4. Luxury Goods

- **Definition**: Luxury goods are high-quality, expensive goods whose demand increases disproportionately as consumer income rises. These goods are often considered non-essential, and people purchase them when they have a higher standard of living.
- **Example**: Designer clothing, luxury cars, or fine jewelry. As people's incomes rise significantly, they are more likely to purchase these high-status items.

5. Substitute Goods

- **Definition**: Substitute goods are products or services that can replace each other. When the price of one good increases, the demand for its substitute increases as well, since consumers will switch to the alternative if it becomes more affordable.
- **Example**: Tea and coffee. If the price of coffee goes up, more consumers may choose to buy tea instead because both are beverages with similar functions.

6. Complementary Goods

- **Definition**: Complementary goods are products that are used together, so a change in the price of one good can affect the demand for the other. If the price of one good increases, the demand for its complement often decreases because the overall cost of using both goods rises.
- **Example**: Cars and gasoline. If the price of gasoline rises, fewer people may buy cars, or they may reduce their driving, decreasing the demand for both.

Q. Demand, law of demand and elasticity of demand.

A. **Definitions:**

1. **Demand**:
   Demand refers to the quantity of a good or service that consumers

are willing and able to purchase at various prices during a given period, assuming all other factors remain constant.

2. **Law of Demand**:
   The Law of Demand states that, all else being equal, the quantity demanded of a good or service is inversely related to its price. As the price of a good or service decreases, the quantity demanded increases, and vice versa. This negative relationship occurs because consumers are more willing to buy more of a good when its price is lower.
3. **Elasticity of Demand**:
   Elasticity of Demand refers to the responsiveness of the quantity demanded of a good or service to changes in its price. If the quantity demanded changes significantly with a small change in price, the demand is said to be elastic. If the quantity demanded changes little with a change in price, the demand is considered inelastic.

Q. What factors lead to movements along the demand and supply curves, and how do shifts in these curves reflect changes in the market equilibrium?

A. **Demand and Supply Curves: Movements and Shifts**

1. Demand Curve Movements and Shifts

- **Movement along the Demand Curve**: A movement along the demand curve occurs when there is a change in the **price** of the good or service, while all other factors remain constant. This is in accordance with the **Law of Demand**.
  - **If price decreases**: The quantity demanded increases, and the movement is **downward** along the demand curve.
  - **If price increases**: The quantity demanded decreases, and the movement is **upward** along the demand curve.

Example: If the price of coffee decreases from $5 to $3, consumers may buy more coffee, causing a movement down the demand curve.

- **Shift of the Demand Curve**: A shift in the demand curve occurs when there is a **change in a non-price factor** that affects demand. Factors like income, consumer preferences, the price of related goods (substitutes or complements), and expectations can cause the demand curve to shift.
    - **Rightward Shift (Increase in Demand)**: If any of the following factors change positively (e.g., an increase in income or an increase in the price of a substitute good), the demand for the good increases at all price levels, shifting the demand curve to the right.
    - **Leftward Shift (Decrease in Demand)**: If any of the factors change negatively (e.g., a decrease in consumer income or a decrease in the popularity of the product), the demand for the good decreases at all price levels, shifting the demand curve to the left.

Example: If consumers' income increases, they may demand more luxury cars at all prices, causing a rightward shift in the demand curve for luxury cars.

2. Supply Curve Movements and Shifts

- **Movement along the Supply Curve**: A movement along the supply curve happens when there is a **change in the price** of the good or service, while other factors remain constant.
    - **If price increases**: The quantity supplied increases, and the movement is **upward** along the supply curve.
    - **If price decreases**: The quantity supplied decreases, and the movement is **downward** along the supply curve.

Example: If the price of smartphones rises from $400 to $500, producers may be willing to supply more smartphones, leading to a movement up the supply curve.

- **Shift of the Supply Curve**: A shift in the supply curve occurs when there is a **change in non-price factors** affecting supply, such as production costs, technology, the number of producers, or expectations about future prices.

    - **Rightward Shift (Increase in Supply)**: If the cost of production decreases (e.g., due to technological advancement or a reduction in raw material prices), the supply increases at all price levels, shifting the supply curve to the right.
    - **Leftward Shift (Decrease in Supply)**: If production becomes more expensive (e.g., due to higher labor costs or new regulations), the supply decreases at all price levels, shifting the supply curve to the left.

Example: If new technology makes it cheaper to produce solar panels, the supply of solar panels will increase at every price level, causing a rightward shift in the supply curve.

Summary:

- **Movements** along the demand or supply curve are caused by **changes in price**.
- **Shifts** in the demand or supply curve are caused by **changes in non-price factors** (income, tastes, production costs, etc.).

(Examples are optional)

Q. Factors of Production.

A. **Factors of Production – Extended Definitions**

1. **Land**:
   Land is the first factor of production and includes all natural resources that are used to produce goods and services. This goes beyond just the physical ground to encompass resources such as minerals, forests, rivers, and even the climate. Land is considered a passive factor as it provides the necessary raw materials for production without human intervention. The quality and availability of these natural resources play a critical role in determining the productivity of an economy.
    - **Example**: Fertile land used for agriculture, oil reserves for energy production, and forests for timber.

2. **Labor**:
   Labor refers to the human effort, both physical and intellectual, that goes into producing goods and services. It includes all workers, from manual labourers to skilled professionals and creative thinkers, who contribute their energy, expertise, and time. Labor is an active factor of production because it transforms raw materials into finished products. The productivity of labour depends on factors like education, skills, motivation, and health.
   - **Example**: Factory workers assembling vehicles, software developers writing code, and teachers delivering education.
3. **Capital**:
   Capital is the collection of man-made resources used in the production process. Unlike land, capital is not naturally occurring and must be created through investment and human effort. It includes machinery, tools, buildings, vehicles, and technology that aid in producing goods and services. Capital enhances productivity by enabling more efficient production methods. It is important to note that in economics, capital does not mean money but rather the assets that are used to generate wealth.
   - **Example**: Machines in a car factory, the infrastructure of a warehouse, or delivery trucks used by an e-commerce company.
4. **Entrepreneurship**:
   Entrepreneurship is the driving force behind the other factors of production. Entrepreneurs are individuals who identify opportunities, take risks, and organize the use of land, labor, and capital to create goods and services. They bring innovation, strategic planning, and leadership into the production process. Entrepreneurs are often seen as the agents of economic change because they introduce new ideas, create jobs, and improve efficiency. Their ability to manage uncertainty and allocate resources effectively is crucial for economic growth.

- **Example**: A tech innovator launching a groundbreaking app or a business owner opening a new chain of restaurants.

Q. Different structures of Market.

A. **Types of Markets**

1. **Perfect Competition**:
   Perfect competition is a market structure characterized by a large number of small firms producing identical products. There are no barriers to entry or exit, and all participants have perfect knowledge of prices and market conditions. Firms in this market are price takers, meaning they cannot influence the market price and must accept the prevailing price.
   - **Key Features**:
     - Large number of buyers and sellers.
     - Homogeneous products.
     - Free entry and exit.
     - Perfect information.
2. **Monopoly**:
   A monopoly is a market structure where a single firm dominates the market and is the sole provider of a particular good or service. This firm has significant control over the price due to the lack of competition. Barriers to entry are high, often due to legal restrictions, high startup costs, or control of essential resources.
   - **Key Features**:
     - Single seller.
     - No close substitutes for the product.
     - High barriers to entry.
     - Price maker.

3. **Monopolistic Competition**:
   Monopolistic competition is a market structure with many firms that

sell similar but slightly differentiated products. Firms compete on factors other than price, such as quality, branding, or customer service. Entry and exit in the market are relatively easy.

- **Key Features**:
  - Many sellers.
  - Differentiated products.
  - Non-price competition (e.g., advertising and branding).
  - Relatively low barriers to entry.

4. **Oligopoly**:
   An oligopoly is a market structure dominated by a small number of large firms. These firms have significant market power and are often interdependent, meaning the actions of one firm affect the others. Products can be homogeneous (e.g., steel) or differentiated (e.g., automobiles). Barriers to entry are high.
   - **Key Features**:
     - Few dominant firms.
     - Interdependence among firms.
     - Potential for collusion (firms working together to set prices).
     - High barriers to entry.
5. **Duopoly**:
   A duopoly is a special case of oligopoly where only two firms dominate the market. These firms hold significant market power and can influence prices and output levels. Their behavior is highly interdependent, and competition can be intense or lead to collusion.
   - **Key Features**:
     - Two dominant firms.
     - Interdependence in decision-making.
     - Barriers to entry.

Q. What is GDP, and how is it calculated using its main components?

A. **Gross Domestic Product (GDP)** is a monetary measure representing the market value of all final goods and services produced within a country's borders over a specific time period, typically annually or quarterly. It serves as a comprehensive indicator of a nation's economic health and performance.

Key Components of GDP:

1. **Consumption (C):** Total spending by households on goods and services, excluding new housing.
2. **Investment (I):** Expenditures on capital goods that will be used for future production, including business investments in equipment and structures, residential construction, and changes in inventory levels.
3. **Government Spending (G):** Total government expenditures on goods and services, such as defence, education, and public safety, excluding transfer payments like pensions and unemployment benefits.
4. **Net Exports (NX):** The value of a country's exports minus its imports. A positive net export indicates a trade surplus, while a negative value indicates a trade deficit.

These components are encapsulated in the GDP formula:

GDP = C + I + G + (X - M)

Where:

- **C** = Consumption
- **I** = Investment
- **G** = Government Spending
- **X** = Exports
- **M** = Imports

Q. Fiscal Policy

A. **Fiscal policy** refers to the use of government spending and taxation to influence a country's economic conditions, particularly macroeconomic factors such as aggregate demand, employment, inflation, and economic growth.

Key Components of Fiscal Policy:

1. **Government Spending:** Expenditures on goods and services, infrastructure, education, and social programs.
2. **Taxation:** The means by which governments finance their spending by imposing charges on citizens and corporate entities.

Types of Fiscal Policy:

- **Expansionary Fiscal Policy:** Implemented to stimulate the economy during periods of recession or economic downturn. This involves increasing government spending, reducing taxes, or both, to boost aggregate demand and reduce unemployment.
- **Contractionary Fiscal Policy:** Used to cool down an overheating economy facing high inflation. This approach involves decreasing government spending, increasing taxes, or both, to reduce aggregate demand and control inflation.

Objectives of Fiscal Policy:

- **Economic Growth:** Promoting sustainable economic development.
- **Employment:** Achieving low unemployment rates.
- **Price Stability:** Controlling inflation and stabilizing prices.
- **Income Redistribution:** Reducing economic inequalities through progressive taxation and social welfare programs.

Q. Monetary Policy.

Definition:

Monetary policy refers to the actions and measures taken by a country's central bank to regulate and control the money supply and interest rates in the economy to achieve specific macroeconomic objectives, such as

controlling inflation, promoting economic growth, and maintaining employment.

Objectives of Monetary Policy:

1. **Price Stability**:
   The primary objective is to maintain stable prices by controlling inflation. A stable price environment helps consumers and businesses make informed decisions, which contributes to economic stability.
2. **Full Employment**:
   Monetary policy aims to promote full employment by ensuring that there are enough jobs for those who want to work. It involves adjusting interest rates to influence economic activity, which in turn can affect employment levels.
3. **Economic Growth**:
   By influencing factors like investment, consumption, and overall economic activity, monetary policy helps ensure sustainable long-term economic growth. A stable and growing economy fosters business development and job creation.
4. **Exchange Rate Stability**:
   Central banks may focus on maintaining stable exchange rates to promote favorable conditions for international trade and investments. A stable exchange rate helps prevent excessive volatility in the value of the national currency.

Components of Monetary Policy:

1. **Interest Rates**:
   Central banks control key interest rates, such as the benchmark or federal funds rate, to influence borrowing costs. A lower interest rate encourages borrowing, investment, and spending, while a higher rate discourages borrowing, helping to control inflation.
2. **Open Market Operations**:
   This refers to the buying and selling of government securities

(bonds) by the central bank. When the central bank buys securities, it injects money into the banking system, increasing liquidity and reducing interest rates. Conversely, when it sells securities, it reduces liquidity and raises interest rates.

3. **Reserve Requirements**:
   Central banks set the reserve requirements that determine the portion of deposits commercial banks must hold in reserve rather than lend out. By adjusting these requirements, the central bank can influence the money supply. A higher reserve requirement reduces the amount of money banks can lend, while a lower requirement allows for more lending.
4. **Direct Lending and Discount Rate**:
   Central banks can lend directly to commercial banks through discount lending. The discount rate is the interest rate charged on loans to commercial banks. Lowering the discount rate makes it cheaper for banks to borrow from the central bank, thus increasing the money supply, while raising it makes borrowing more expensive, reducing liquidity.

Monetary Policy Tools and Techniques:

1. Contractionary Monetary Policy:

This policy is used to reduce inflation or slow down an overheating economy.

- **Increase in Interest Rates**:
  Central banks increase interest rates to make borrowing more expensive, reducing consumer spending and business investment, which helps control inflation.
- **Open Market Operations**:
  The central bank sells government securities in the open market. This reduces the money supply, raises interest rates, and tightens liquidity in the banking system.
- **Increase in Reserve Requirements**:
  By raising the reserve requirements, central banks reduce the

amount of money available for lending, thus reducing the money supply and credit expansion.

2. Expansionary Monetary Policy:

This policy is used to stimulate economic growth, particularly during periods of recession or slow growth.

- **Decrease in Interest Rates**:
  Central banks lower interest rates to make borrowing cheaper, encouraging businesses and consumers to borrow and spend, thereby stimulating economic activity.
- **Open Market Operations**:
  The central bank buys government securities, which increases the money supply, lowers interest rates, and encourages spending and investment.
- **Decrease in Reserve Requirements**:
  By lowering reserve requirements, central banks allow banks to lend more money, thus increasing the money supply and promoting credit expansion.

Q. What are the different types of elasticity of demand

A. **Types of Elasticity of Demand**

Elasticity of demand refers to how sensitive the quantity demanded of a good or service is to a change in its price. Based on this responsiveness, demand can be classified into different types. Here are the **main types of elasticity of demand**:

1. Price Elasticity of Demand (PED)

Definition:

Price Elasticity of Demand (PED) measures the responsiveness of the quantity demanded of a good to a change in its price. It is calculated as the percentage change in quantity demanded divided by the percentage change in price.

- **Types/Degree of Price Elasticity**:
  - **Elastic Demand (PED > 1)**:
    When the percentage change in quantity demanded is greater than the percentage change in price.
    - **Example**: Luxury goods like designer clothes or electronics. A small increase in price leads to a significant decrease in demand.
  - **Inelastic Demand (PED < 1)**:
    When the percentage change in quantity demanded is less than the percentage change in price.
    - **Example**: Necessities like salt or basic medicines. A price increase doesn't significantly affect the quantity demanded.
  - **Unitary Elastic Demand (PED = 1)**:
    When the percentage change in quantity demanded is exactly equal to the percentage change in price.
    - **Example**: A situation where a 10% increase in price results in a 10% decrease in demand.

2. Income Elasticity of Demand (YED)

Definition:

Income Elasticity of Demand (YED) measures the responsiveness of the quantity demanded of a good to a change in consumer income.

- **Types/degree of Income Elasticity**:

1. **Positive Income Elasticity**:
   Increase in normal/luxury goods, there will be a positive relation between income and demand because as income increases, demand increases and vice versa. Positive income elasticity may be of three types-**EY = 1, EY > 1**, **EY < 1**
2. **Negative Income Elasticity (EY < 0)**:
   In case of inferior goods, the income elasticity of demand is negative because there will be an inverse relation between income and

demand for inferior goods. As income increases, demand for inferior goods decreases and vice versa.

3. **Zero Income Elasticity (EY = 0)**:
   In case of necessary goods, whether income increases or decreases, the quantity demanded remains the same. So, zero income is found here. This happens in the cases of necessity goods.

3. Cross-Price Elasticity of Demand (XED)

Definition:

Cross-Price Elasticity of Demand (XED) measures the responsiveness of the quantity demanded for one good to a change in the price of another good.

- **Types of Cross-Price Elasticity**:
  - **Positive Cross-Price Elasticity (XED > 0)**:
    When the two goods are **substitutes**, meaning an increase in the price of one good leads to an increase in demand for the other.
    - **Example**: Tea and coffee. If the price of tea rises, people may switch to coffee, increasing its demand.
  - **Negative Cross-Price Elasticity (XED < 0)**:
    When the two goods are **complements**, meaning an increase in the price of one good leads to a decrease in the demand for the other.
    - **Example**: Printers and ink cartridges. If the price of printers rises, the demand for ink cartridges may decrease.
  - **Zero Cross-Price Elasticity (XED = 0)**:
    When the two goods are **unrelated**, meaning a change in the price of one good does not affect the demand for the other.
    - **Example**: Bread and cars. Changes in the price of bread have no effect on the demand for cars.

Q. Relationship between Total Product (TP), Marginal Product (MP), and Average Product (AP).

A. In economics, understanding the relationships between Total Product (TP), Marginal Product (MP), and Average Product (AP) is essential for analyzing production efficiency and the impact of variable inputs on output.

Definitions:

- **Total Product (TP):** The total quantity of output produced by a firm using a given amount of inputs.
- **Marginal Product (MP):** The additional output produced when one more unit of a variable input is added, holding all other inputs constant.
- **Average Product (AP):** The output produced per unit of variable input, calculated by dividing Total Product by the quantity of the variable input used.

Relationships:

1. **Total Product and Marginal Product:**
    - The Marginal Product represents the rate of change of Total Product with respect to the variable input. When MP is positive, TP increases; when MP is negative, TP decreases. The shape of the TP curve is influenced by the behavior of MP.
2. **Total Product and Average Product:**
    - The Average Product curve is derived from the Total Product curve by drawing lines from the origin to various points on the TP curve. The slope of these lines represents the Average Product at each level of input. As input increases, AP initially rises, reaches a maximum, and then declines.
3. **Marginal Product and Average Product:**
    - The relationship between MP and AP is crucial:
        - When MP is greater than AP, AP is rising.
        - When MP is less than AP, AP is falling.
        - When MP equals AP, AP is at its maximum point.

Q. Relationship between Total Revenue (TR), Average Revenue (AR) and Marginal Revenue (MR)

A. In economics, understanding the relationships between Total Revenue (TR), Average Revenue (AR), and Marginal Revenue (MR) is essential for analysing a firm's revenue structure and pricing strategies.

Definitions:

- **Total Revenue (TR):** The total income a firm receives from selling its output, calculated by multiplying the price per unit (P) by the quantity sold (Q):
- **Average Revenue (AR):** The revenue per unit of output, which is equal to the price per unit in most market structures:
- **Marginal Revenue (MR):** The additional revenue generated from selling one more unit of output, calculated as the change in total revenue divided by the change in quantity:

Relationships:

1. **TR and AR:**
    - In perfectly competitive markets, the price remains constant regardless of the quantity sold, so AR equals MR and both are constant.
    - In imperfectly competitive markets, as a firm increases output, it may need to lower the price to sell additional units, leading to a
2. **TR and MR:**
    - MR is the derivative of TR with respect to quantity. This means that the slope of the TR curve at any point represents the MR at that level of output. Where TR is increasing, MR is positive; where TR is decreasing, MR is negative.
3. **AR and MR:**
    - In perfect competition, AR equals MR and both are constant.
    - In imperfect competition, MR is less than AR, and both typically decline as output increases.