# Class 11

## Economics

## Set 5 with Solutions

**Time Allowed : 3 hours**                                    **Maximum Marks : 80**

General Instructions:

All questions are compulsory.

Marks for questions are indicated against each question.

Q. No. 1 to 10 and 18 to 27 are Objective Type Questions / Multiple Choice Questions carrying 1 mark each.

Q. No. 11 to 12 and 28 to 29 are Short Answer Type Questions 1 carrying 3 marks each.

Q. No. 13 to 15 and 30 to 32 are Short Answer Type Questions II carrying 4 marks each.

Q. No. 16 to 17 and 33 to 34 are Long Answer Type Questions carrying 6 marks each.

Section – A

Question 1.
Identify the correct pair of terms with their definition from the following Columns I and II: [1]

| Column I | Column II |
|---|---|
| A. Middle item | 1. Mean |
| B. Highest frequency | 2. Mode |
| C. Effected by extreme items | 3. Median |
| D. Calculated by grouping | 4. Combined Mean |

(A) A – 1
(B) B – 2
(C) C – 3
(D) D – 3
OR
Identify the correct pair of terms and definitions from the following Columns I and II:

| Column I | Column II |
|---|---|
| A. Upper Quartile | 1. Divides the series in 10 equal parts |
| B. Lower Quartile | 2. Divides the series in the ratio 1 : 3 |
| C. Median | 3. Divides the series in 100 equal parts |
| D. Percentile | 4. Divides the series in 2 equal parts |

(A) A – 1
(B) B – 2
(C) C – 3
(D) D – 4

Answer:

(B) B – 2

OR

Question 2.
Statistics is concerned with: [1]
(A) Aggregates of organised facts
(B) Aggregates of disorganized facts
(C) Aggregates of purposeless facts
(D) Aggregates of unrelated facts
Answer:
(A) Aggregates of organised facts

Explanation:
A single numerical fact cannot be called statistics, even though the fact is numerically expressed and affected by multiplicity of causes, etc. No conclusion can be drawn from a single numerical fact. If this numerical fact is not placed in relation to any other numerical fact, it is not statistics.
Statistics should be aggregate of facts and not one fact only as these facts can be compared and conclusions can be drawn from them.

Question 3.
Read the following Statement 1 and Statement 2 and choose the correct alternatives: [1]
Statement 1: The calculation of mode is very complex.
Statement 2: Mode is item that occurs the highest number of times.
Alternatives:
(A) Both Statement 1 and Statement 2 are true.
(B) Both Statement 1 and Statement 2 are false.
(C) Only Statement 1 is true.
(D) Only Statement 2 is true.
Answer:
(D) Only Statement 2 is true.

Explanation:
Statement 1 is false as Mode is very easy to calculate as it is the observation with the highest frequency.

Question 4.
High degree of correlation exists when two values of coefficient of correlation is between [1]
(A) 0 and 0.25
(B) 0.25 and 0.5
(C) 0.5 and 0.75
(D) 0.75 and 1
Answer:
(D) 0.75 and 1

Explanation:

when correlation coefficient (r) is between+0.75 and+1, high degree of positive correlation and when it is between -0.75 to -1 high degree of negative correlation.

when (r) is close to zero, it's low degree correlation.

there is moderate degree of correlation when coefficient of correlation is neither too high nor too low, [positive (+0.25 and +0.75)] negative (between -0.25 and -0.75).

Question 5.
Read the following Assertion (A) and Reason (R) and choose the correct alternative: [1]
Assertion (A): Fisher's Index Number is considered the most ideal index.
Reason (R): Ideal index number is the best way of calculating index number.
Alternatives:
(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.
Answer:
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

Explanation:
Fisher's Index Number is considered most ideal as it is the geometric mean of the Laspeyre's Index Number and Paasche's Index Number.

Question 6.
Which average is affected most by extreme observation? [1]
(A) Mean
(B) Median
(C) Mode
(D) All of the above.
Answer:
Option (A) is correct

Explanation:
Mean depends on all the observations, so it is affected by the extreme values.

Read the following passage and answer questions 7 to 10 that follow:

Activities involved in production (manufacturing), distribution (transportation) and consumption (retail) are constantly seeking economies to improve their competitiveness and increase their market share. The consumption of goods and services is a primary component of economic well-being and, as such, a primary indicator of living standards. Wealth and income are available to support consumption, today and in the future. Production, in the market and at home, supports consumption.

Economies of transportation relate to the benefits that lower transport costs may grant to specific activity sectors and are derived from a locational choice. For production, it relates to a location that minimizes total transport costs and thus lowers production unit costs. Some are elements of transport costs in production while others are elements of transport costs in consumption.

Economies of scope relate to the benefits derived by expanding the range of goods and services. For production, they are commonly based on product diversification and flexible manufacturing systems able to produce a variety of products in view of changes in demand and consumer preferences.

For distribution, economies of scope are very important and commonly achieved when a transporter is able to bundle several different loads into fewer loads. For consumption, activities offering a wider range of goods or services are usually able to attract more customers since they have more choices. Economies of scale and economies of scope are highly related.

Question 7.
Economics is a _____ (social/physical/political/economic) science which studies economic behaviour of a man. [1]
Answer:
Social

Question 8.
When we want to know how the consumer decides, given his income and many alternative goods to choose from, what to buy when he knows the prices. This is the study of _____ [1]
(A) Production
(B) Consumption
(C) Demand
(D) Supply
Answer:
(B) Consumption

Question 9.
Read the following statements -Statement (1) and Statement (2). [1]
Statement (1): Economies of scale and economies of scope are highly related.
Statement (2): Both economies of scale and economies of scope result in the savings in cost.
Select the correct alternative from the following:
(A) Both Statement (1) and Statement (2) are true
(B) Both Statement (1) and Statement (2) are false
(C) Only Statement (1) is true
(D) Only Statement (2) is true
Answer:
(A) Both Statement (1) and Statement (2) are true

Explanation:
Economies of scale and scope are related as both of them reduce the cost.

Question 10.
State whether the given statement is true or false: [1]
Establishing a dairy for producing milk products for consumers which turns to be a method of earning wealth is an example of economic activity.
Answer:
True

Question 11.
State four characteristics of Index Numbers. [3]
Answer:
Following are the four characteristics of Index Numbers:

Expressed in numbers

Relative measure

Average of percentage

Basis for comparison

Universal utility

Question 12.
Calculate the correlation coefficient between X and Y and comment on their relationship: [3]

| X | 1 | 3 | 4 | 5 | 7 | 8 |
|---|---|---|---|---|---|---|
| Y | 2 | 6 | 8 | 10 | 14 | 16 |

OR
The following tables gives the daily income of ten workers in a factory. Find the arithmetic mean. [3]

| A | B | C | D | E | F | G | H | I | J |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 120 | 150 | 180 | 200 | 250 | 300 | 220 | 350 | 370 | 260 |

Answer:

| X | Y | XY | $X^2$ | $Y^2$ |
|-----|-----|-----|-----|-----|
| 1 | 2 | 2 | 1 | 4 |
| 3 | 6 | 18 | 9 | 36 |
| 4 | 8 | 32 | 16 | 64 |
| 5 | 10 | 50 | 25 | 100 |
| 7 | 14 | 98 | 49 | 196 |
| 8 | 16 | 128 | 64 | 256 |
| 28 | 56 | 328 | 164 | 656 |

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2}\sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

$$= \frac{(6\times 328) - (28\times 56)}{\sqrt{(6\times 164) - (28)^2}\sqrt{(6\times 656) - (56)^2}}$$

$$= 1$$

There is perfect positive correlation.

OR

$$\bar{X} = \frac{X_1 + X_2 + X_3 + X_4 + ... + X_n}{N}$$

$$= \frac{120 + 150 + 180 + 200 + 250 + 300 + 220 + 350 + 370 + 260}{10}$$

$$\bar{X} = \frac{2,400}{100} = ₹240$$

Question 13.
Rice yield per hectare is given below. Show the data diagrammatically. [4]

| Year | Yield per hectare (in kg) |
|------|---------------------------|
| 1999-2000 | 668 |
| 2000-01 | 1013 |
| 2001-02 | 1123 |
| 2002-03 | 1235 |
| 2003-04 | 1336 |
| 2004-05 | 1552 |
| 2005-06 | 1482 |

OR
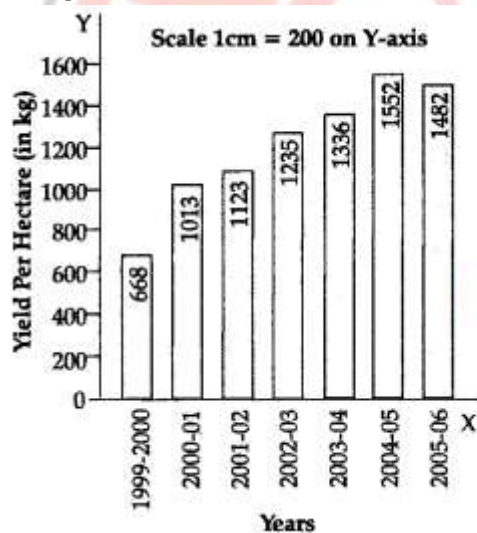Construct the frequency polygon with histogram from the following data: [4]

| Class | Frequency |
|-------|-----------|

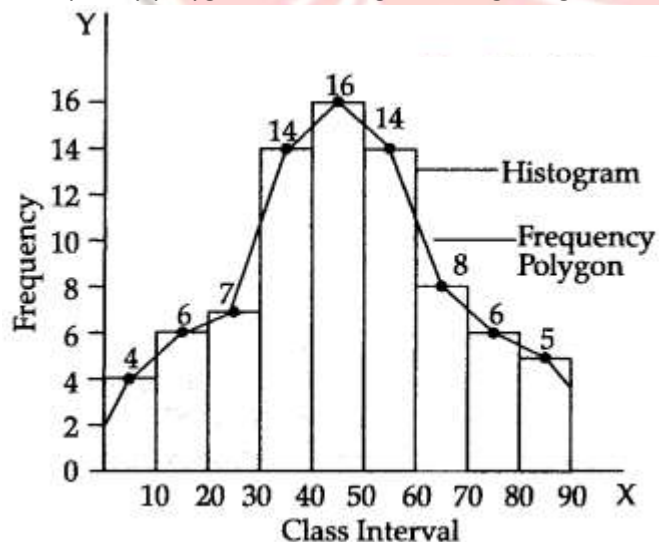| | |
|---|---|
| 0-10 | 4 |
| 10-20 | 6 |
| 20-30 | 7 |
| 30-40 | 14 |
| 40-50 | 16 |
| 50-60 | 14 |
| 60-70 | 8 |
| 70-80 | 6 |
| 80-90 | 5 |

Answer:

The above data can be presented with the help of a simple bar diagram, since only one variable is to be presented. The figure is drawn below:



OR

A frequency polygon with histogram using the given data is shown below:

Question 14.
Find out the median for the data given below:

| Class | Frequency |
|---|---|
| 0-10 | 10 |
| 10-20 | 5 |
| 20-30 | 5 |
| 30-40 | 10 |
| 40-50 | 15 |
| 50-60 | 5 |
| 60-70 | 10 |

Answer:

| Class | Frequency | c.f. |
|---|---|---|
| 0-10 | 10 | 10 |
| 10-20 | 5 | 15 |
| 20-30 | 5 | 20 |
| 30-40 | 10 | 30 |
| 40-50 | 15 | 45 |
| 50-60 | 5 | 50 |
| 60-70 | 10 | 60 |
|  | N = 60 |  |

M = Size of (N2)th item
= Size of (602)th item
= size of 30th item
which lies in 30-40 group.
By Interpolation:
$\Rightarrow$ M = l1 + l2−l1f (m − c)
$\Rightarrow$ M = 30 + 40−3010 (30 − 20)
$\Rightarrow$ M = 30 + 1010 (10)
$\Rightarrow$ M = 30 + 10
$\Rightarrow$ M = 40

Question 15.
Calculate the mean from the following data:

| Size of item | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70 – 80 |
|---|---|---|---|---|---|---|---|
| Frequency | 5 | 10 | 15 | 20 | 25 | 18 | 7 |

Answer:

| Size of item (x) | Mid-Value (MV) | dx (A = 45) (x – A) | d'x (i = 10) (dx ÷ i) | f | fd'x |
|---|---|---|---|---|---|
| 10 – 20 | 15 | – 30 | – 3 | 5 | – 15 |
| 20 – 30 | 25 | – 20 | – 2 | 10 | – 20 |
| 30 – 40 | 35 | – 10 | – 1 | 15 | – 15 |
| 40 – 50 | 45 | 0 | 0 | 20 | 0 |
| 50 – 60 | 55 | 10 | 1 | 25 | 25 |
| 60 – 70 | 65 | 20 | 2 | 18 | 36 |
| 70 – 80 | 75 | 30 | 3 | 7 | 21 |
| | | | | N = 100 | $\Sigma fd'x = 32$ |

Mean $(\bar{x})$ = A + $\frac{\Sigma fdix}{N} \times i$

= 45 + $\frac{32}{100} \times i$

= 45 + 3.2

= 48.2

Question 16.
Using the simple aggregative method, calculate the index number for the given data: [6]

| Commodity | A | B | C | D |
|---|---|---|---|---|
| $p_1$ | 15 | 22 | 20 | 27 |
| $p_0$ | 10 | 20 | 18 | 25 |

Answer:
Construction of Index Number

| Commodity | P0 (base year) | P1 (current year) |
|---|---|---|
| A | 10 | 15 |
| B | 20 | 22 |
| C | 18 | 20 |
| D | 25 | 27 |
| | $\Sigma P0 = 73$ | $\Sigma P1 = 84$ |

Formula:

$P01 = \frac{\Sigma P1}{\Sigma P0} \times 100$

$\Rightarrow P01 = \frac{84}{73} \times 100 = 115.6$

Question 17.
Marks obtained in Maths and Economics obtained by six students are given below. Calculate Rank Co-efficient of Correlation: [6]

| Students | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Ranks in Maths | 85 | 60 | 55 | 65 | 75 | 90 |
| Ranks in Economics | 60 | 48 | 49 | 50 | 55 | 62 |

OR

What is arithmetic mean and its characteristic.

Explain the characteristics, merits and demerits of arithmetic mean. [6]

Answer:

| Mark in Maths (X) | $R_1$ | Mark in Economics (Y) | $R_2$ | D ($R_1 - R_2$) | $D^2$ |
|---|---|---|---|---|---|
| 85 | 2 | 60 | 2 | 0 | 0 |
| 60 | 5 | 48 | 6 | −1 | 1 |
| 55 | 6 | 49 | 5 | 1 | 1 |
| 65 | 4 | 50 | 4 | 0 | 0 |
| 75 | 3 | 55 | 3 | 0 | 0 |
| 90 | 1 | 62 | 1 | 0 | 0 |
| N = 6 | | | | $\Sigma D = 0$ | $\Sigma D^2 = 2$ |

$$R = 1 - \frac{6\Sigma D^2}{N(N^2-1)} = 1 - \frac{6 \times 2}{6(6^2-1)}$$

$$= 1 - \frac{12}{210}$$

$$= 1 - 00.6$$

$$= 0.94$$

OR

Arithmetic average or mean of series of items is obtained by adding values of the items and dividing by the number of items.

Characteristics of Arithmetic Mean:

Easy to compute: The calculation of arithmetic mean is very simple and easy.

Easy to understand: It is very easy to understand even common man can understand it easily.

Least affected by fluctuations: Its main feature is that it is hardly affected by the changes.

Based on all the items of series: It is based on all items of series which helps in getting the proper picture of whole data.

Merits of Arithmetic Mean:

To present a brief picture of data: The main purpose of average is to present a simple and systematic description of the data.

To represent the universe: It also helps to obtain a picture of a complete group.

Basis of statistical analysis: It is the basis of statistical analysis and analysis of data.

To facilitate comparison: It helps in comparing the data of various categories.

Demerits of Arithmetic Mean:

Arithmetic mean is highly affected by extreme values.

It cannot average the ratios and percentages properly.

It is not an appropriate average for highly skewed distributions.

It cannot be computed accurately if any item is missing.

## Section – B

Question 18.
Read the following Assertion (A) and Reason (R) and choose the correct alternative: [1]
Assertion (A): Marginal Utility diminishes as the person consumes more unit of a commodity.
Reason (R): Utility derived from each unit of a commodity is less than that of the previous one.
Alternatives:
(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.
OR
Read the following Assertion (A) and Reason (R) and choose the correct alternative: [1]
Assertion (A): The demand curve slopes downward because of law of diminishing marginal utility.
Reason (R): As more of a product is consumed the marginal (additional) benefit to the consumer rises.
Alternatives:
(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.
Answer:
(A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

Explanation:
Law of diminishing marginal utility states that as more and more units of a commodity are consumed, marginal utility derived from every additional unit must decline.

OR

(C) Assertion (A) is true, but Reason (R) is false.

Explanation:
As more of a product is consumed, the marginal benefit to the consumer decreases.

Question 19.
When we add a utility derived from the consumption of all the units of the commodities, we get: [1]
(A) TU
(B) Initial utility
(C) MU
(D) None of these
Answer:
(A) TU

Explanation:
Total Utility is the utility derived from the total consumption of a commodity.
Marginal Utility is the utility derived from the consumption of one extra unit of a commodity.

Question 20.
As more and more units of a commodity are consumed, marginal utility derived from additional unit must decline.
Write the name of the law stated earlier. [1]
(A) Law of Equi – Marginal Utility
(B) Law of Diminishing Marginal Utility
(C) Law of Demand
(D) Law of Supply
Answer:
Option (B) is correct

Explanation:
Law of diminishing marginal utility states that as more and more units of a commodity are consumed, marginal utility derived from every additional unit must decline.

Question 21.
Increase in price of substitute goods leads to: [1]
(A) Expansion in demand
(B) Increase in demand
(C) Decrease in demand
(D) Contraction in demand
Answer:
(B) Increase in demand

Explanation:
An increase in the price of a substitute good (say coffee) will cause an increase in demand for its related good (say tea). As a result demand curve of tea will shift to the right.

Question 22.
Identify the correct pair of items from the following Columns I and II: [1]

| Column I | Column II |
| --- | --- |
| A. Monotonic Preferences | 1. Consumer's preferences are called monotonic when between any three bundles, consumer always choose a bundle having more of one good and no less of other goods. |
| B. Indifference Set | 2. It is a set of those division of two goods which offer the consumer the same level of satisfaction, so that the consumer is indifferent across any number of combinations in his indifference set. |
| C. Indifference Curve | 3. It is a curve showing different combinations of two goods, each combination offering the same level of satisfaction to the consumer. |
| D. Indifference Map | 4. It refers to a set of indifference curves placed in different diagrams for the same type of goods. |

(A) A – 1
(B) B – 2
(C) C – 3
(D) D – 4
Answer:
(C) C – 3

Question 23.
In the long period, the supply for a commodity is: [1]
(A) Perfectly inelastic
(B) Less elastic
(C) Highly elastic
(D) Perfectly elastic
Answer:
(C) Highly elastic

Read the following article and answer questions 24 to 27 that follows:

The production function exhibits technological relationships between physical inputs and outputs and is thus said to belong to the domain of engineering. Prof. Stigler does not agree with this commonly held view. The function of management is to sort out the right type of combination of inputs for the quantity of output he desires.

For this, he has to know the prices of his inputs and the technique to be used for producing a specified output within a specified period of time. All these technical possibilities are derived from applied sciences but cannot be worked out by technologists or engineers alone. The entrepreneurs also provide productive services, and they are far from standardized.

Some men can get gang of workers to do their best, others are better at luring customers, still others at borrowing money, and each will have a different production function. If we take account of activities such as selling, settling strikes and anticipating future styles of product, it is clear that large segments of what we mean by technique are matters of business knowledge and talents, not to be acquired in the best engineering schools." The production function is, in fact, "the economist's summary of technological knowledge," as pointed out by Prof. Stigler.

Question 24.
The production function exhibits _____ (technological/productional/social) relationship between physical [1]
Answer:
technological

Question 25.
Who all have a production function? [1]
(A) Gang of workers
(B) Luring customers
(C) Borrowers
(D) All of the above
Answer:
(D) All of the above

Question 26.
The other name for law of production is _____ (law of producers/law of variable proportions/ law of producer's variable) [1]
Answer:
Law of variable proportions.

Question 27.
What is the production function? [1]
(A) The economist's summary of technological knowledge.
(B) The biologist's summary of technological knowledge.
(C) The environmentalist's summary of technological knowledge.
(D) The artist's summary of technological knowledge.
Answer:
(A) The economist's summary of technological knowledge.

Question 28.
What will be the effect in the equilibrium price if both the demand and supply in the economy increases? [3]
OR
In a perfect competition the perfect knowledge can be of:
(i) Market
(ii) Inputs used in production.
What implications does it have? [3]
Answer:
These are three possibilities:
1. If the relative (percentage) increase in demand is greater than the increase in supply, price will rise. The price will rise because of excess demand in the market.

2. If the relative (percentage) increase in demand is less than the increase in supply, price will fall. The price falls because of excess supply in market.

3. If the relative (percentage) increase in demand is equal to the increase in supply, price will remain unchanged. The price will remain unchanged because there is neither excess demand nor excess supply in the market.

OR

(i) Market: In a perfectly competitive market, the number of buyers and sellers is very large and all the buyers and sellers have perfect knowledge about the market. As a result no individual buyer or seller can influence the price in the market.

(ii) Inputs used in Production: Another important characteristic of perfect competition is that products are homogeneous and carry the same price. By implication, this means the cost of the inputs used by the producers will be same. As a result of this all sellers have perfect knowledge about the inputs used in the production.

Question 29.
Why is a firm under perfect competition a 'price-taker' and not a 'price-maker'? Explain. [3]
Answer:
There are large number of sellers in perfectly competitive market, so that an individual firm has a negligible share in total supply. As such no individual seller can influence the market price on its own. The seller has no option but to accept the market determined price. It makes the seller a Trice Taker'.

Commonly Made Error:
Some students are not aware of the difference between price taker and price maker.

Answering Tip:
The one who decides the market price is price maker and one who accepts it is price taker.

Question 30.
The price elasticity of demand of a good is (-) 0.5. At a price of ₹40 per unit its demand is 300 units. At what price will its demand increase by 20 percent? [4]
Answer:
$E_d = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$
Given $E_d$ = (-) 0.5, P = ₹40, Q = 300, $P_1$ = ?,
$Q_1$ = 20% of 300
∴ $Q_2$ = 300 + 60 = 360
$\Delta P$ = ?, $\Delta Q$ = 360 – 300 = 60, P = 40, Q = 300
∴ $E_d = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$
or (-) 0.5 = $\frac{60}{\Delta P} \cdot \frac{40}{300}$
or -(0.5) × 300 $\Delta P$ = 2,400
or – 150 $\Delta P$ = 2,400

∴ ΔP = – 2,400150 = (-) 16

New Price = Δp + P = – (16) + 40 = ₹ 24

Question 31.

Complete the following table: [4]

Output (Units)-Average Cost (₹)-Marginal Cost (₹)

| Output | Average Cost | Marginal Cost |
|---|---|---|
| 1 | 12 | – |
| 2 | 10 | – |
| 3 | – | 10 |
| 4 | 10.5 | – |
| 5 | 11 | – |
| 6 | – | 17 |

Answer:

| Output (Units) | Average Cost (AC) (₹) | Total Cost (TC) (₹) | Marginal Cost (MC) (₹) |
|---|---|---|---|
| 1 | 12 | 12 | 12 |
| 2 | 10 | 20 | 8 |
| 3 | 10 | 30 | 10 |
| 4 | 10.5 | 42 | 12 |
| 5 | 11 | 55 | 13 |
| 6 | 12 | 72 | 17 |

Question 32.

Giving reason comment on the shape of Production Possibility Curve based on the following schedule: [3]

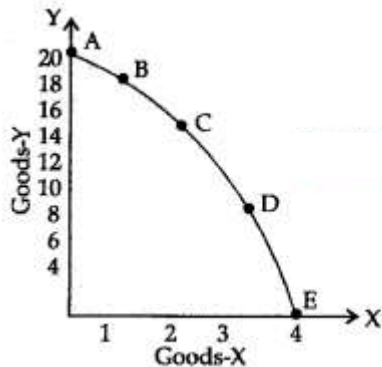| Goods X (Units) | Goods Y (Units) |
|---|---|
| 0 | 20 |
| 1 | 18 |
| 2 | 14 |
| 3 | 8 |
| 4 | 0 |

OR

State and discuss any two factors that will shift the Production Possibility Frontier (PPF) to the right. [3]

Answer:

| Goods X (Units) | Goods Y (Units) |
|---|---|
| 0 | 20 |

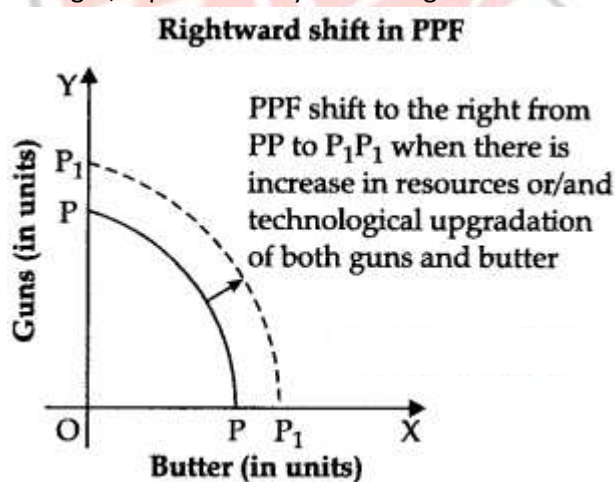| | |
|---|---|
| 1 | 18 |
| 2 | 14 |
| 3 | 8 |
| 4 | 0 |



It is concave in accordance with the pattern in the table. It shows that Marginal Opportunity Cost tends to rise. With every increase in quantity of X, we have to sacrifice more of Y and Marginal Opportunity Cost tends to rise because of the Law of Diminishing Returns.

OR

The PPC can shift either towards right or towards left when:
(i) there is change in resources or
(ii) there is a change in technology with respect to both the goods.

(a) Rightward shift in PPF: When there is advancement of technology or/and increase in availability 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 P1P1 in figure.

**Rightward shift in PPF**



PPF shift to the right from PP to $P_1P_1$ when there is increase in resources or/and technological upgradation of both guns and butter

(b) 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 due to an earthquake will reduce

the productive capacity and as a result PPF will shift to the left from PP to P1P1

**Leftward shift in PPF**



PPF shift to the left from PP to $P_1P_1$ when there is increase in resources or/and technological upgradation of both guns and butter

Butter (in units)
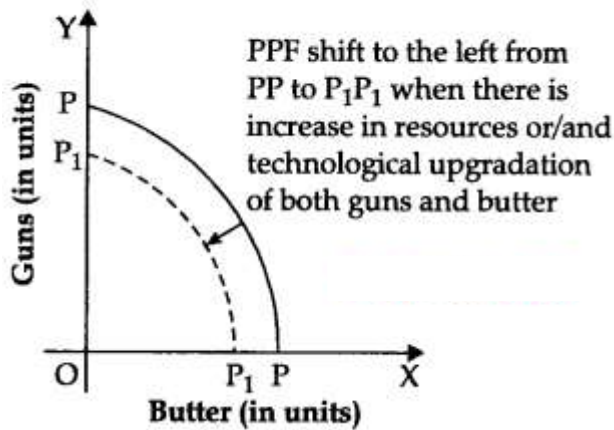
Question 33.
Why is the equality between marginal cost and marginal revenue necessary for a firm to be in equilibrium? Is it sufficient to ensure equilibrium? Explain. [6]
OR
Explain any three causes of "Increase" in supply of a commodity. [6]
Answer:
According to this approach, the producer is at equilibrium, when the Marginal Revenue (MR) is equal to the Marginal Cost (MC) and marginal cost curve cuts the marginal revenue curve from below. [1] Two conditions under this approach are:
(i) MR = MC
(ii) MC curve should cut the MR curve from below, or MC should be rising.
MR is the addition to total revenue from the sale of one more unit of output and MC is the addition to total cost for increasing the production by one unit. The basic aim of every producer is to maximise the profit. For this, a firm compares its MR with its MC.

| Mark in Maths (X) | $R_1$ | Mark in Economics (Y) | $R_2$ | D $(R_1 - R_2)$ | $D^2$ |
|---|---|---|---|---|---|
| 85 | 2 | 60 | 2 | 0 | 0 |
| 60 | 5 | 48 | 6 | −1 | 1 |
| 55 | 6 | 49 | 5 | 1 | 1 |
| 65 | 4 | 50 | 4 | 0 | 0 |
| 75 | 3 | 55 | 3 | 0 | 0 |
| 90 | 1 | 62 | 1 | 0 | 0 |
| N = 6 | | | | $\Sigma D = 0$ | $\Sigma D^2 = 2$ |

$$R = 1 - \frac{6\Sigma D^2}{N(N^2 - 1)} = 1 - \frac{6 \times 2}{6(6^2 - 1)}$$

$$= 1 - \frac{12}{210}$$

$$= 1 - 00.6$$

$$= 0.94$$

As long as the addition to revenue is greater than the addition to cost, it is profitable for a firm to continue producing more units of output.
In the diagram, output is shown on the X-axis and revenue and costs on the Y-axis.

The Marginal Cost (MC) curve is U-shaped and P = MR = AR.

MC = MR at two points R and K in the diagram, but profits are maximised at point K, corresponding to OQ level of output. Between OQ1 and OQ levels of output—MR exceeds MC. Therefore, firm will not stop at point R but will continue to produce to take advantage of additional profit. Thus, equilibrium will be at point K, where both the conditions are satisfied.

Two other situations may also exist are:

(i) MR > MC: When output level is less than OQ, MR > MC, which implies that firm is earning profit on the last units of output. The marginal profit provides an incentive to the firm to increase production and move towards OQ unit of output. Therefore, when MR > MC, the firm increases output to maximise its profit.

(ii) MR < MC: When output level is more than OQ, MR > MC, which implies that firm is making a loss on its last unit of output. Hence, in order to maximize profit, a rational producer decreases output as long as MC > MR. Thus, the firm moves towards producing OQ units of output.

OR

Three causes of "Increase" in supply are:

(i) Fall in the price of other goods: If there is no change in the price of the commodity concerned, and the price of other competing commodity falls, there will be a fall in concerned commodity because those who are using this commodity will switch over to the use of other commodities, thereby increasing its supply.

(ii) Fall in the prices of inputs: Fall in the prices of factor of production leads to a fall in the cost of production which positively affects the supply of a commodity, e.g., when the prices of inputs fall, cost of production also falls, with the result the supply of a commodity will be more at a given price.

(iii) Reduction in taxes, etc.: Government levies tax on every unit of commodity sold or bought. Due to levy of tax, cost of production increases and by reduction in the value of tax, cost of production declines. Therefore, if taxes are reduced cost of production falls and this leads to an increase in the supply of the commodity at the same price.

Question 34.
Explain three properties of Indifference Curves. [6]
Answer:
Properties of Indifference Curve:
1. Indifference Curves are negatively sloped or they slope downwards: It shows that more of one commodity implies less of the other, so that the total satisfaction (at any point on Indifference Curve) remains the same.

2. Indifference Curves are convex to the point of origin: An Indifference Curve will ordinarily be convex to the origin. This is because of Diminishing Marginal Rate of Substitution.

3. Indifference Curve neither touches X-axis nor Y-axis: It is often assumed that a consumer buys a combination of two goods. Hence, an Indifference Curve neither touches X-axis nor Y-axis.

4. Indifference Curves never touch or intersect each other: Each Indifference Curve represents a different level of satisfaction. So, their intersection is ruled out.

5. Higher Indifference Curve represents higher level of satisfaction: This is based on the assumption of monotonic preferences which means that greater consumption of a commodity by the consumer gives higher level of satisfaction.