**SAMPLE QUESTION PAPER - 4**

**Economics (030)**

**Class XI (2024-25)**

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

**General Instructions:**

1. This question paper contains two sections:
   Section A – Micro Economics
   Section B – Statistics
2. This paper contains 20 Multiple Choice Questions type questions of 1 mark each.
3. This paper contains 4 Short Answer Questions type questions of 3 marks each to be answered in 60 to 80 words.
4. This paper contains 6 Short Answer Questions type questions of 4 marks each to be answered in 80 to 100 words.
5. This paper contains 4 Long Answer Questions type questions of 6 marks each to be answered in 100 to 150 words.

**Section A**

1. **Assertion (A):** 100, 95, 48, 86, 35, 65, 90, 54, 65, 98 are the scores of a class of 10 students in Statistics. This is an example of statistical data. **[1]**
   **Reason (R):** The statistical data are expressed in numbers and have to have some homogeneity.

   a) Both A and R are true and R is the correct explanation of A.
   b) Both A and R are true but R is not the correct explanation of A.
   c) A is true but R is false.
   d) A is false but R is true.

2. Paasche index is based on **[1]**

   a) Average of current and base year
   b) Current year quantities.
   c) Base year quantities
   d) Base year Prices

3. If the relationship between x and y is positive, as variable y decreases, variable x **[1]**

   a) Increases
   b) Remains same

c) Changes linearly d) Decreases

4. Calculate index numbers from the following data by simple aggregate method taking prices of 2000 as base. **[1]**

| Commodity | | A | B | C | D |
|---|---|---|---|---|---|
| Price per unit (in Rupees) | 2000 | 80 | 50 | 90 | 30 |
| | 2001 | 95 | 60 | 100 | 45 |

a) 120 b) 150

c) 130 d) 140

5. If with the rise of 10% in prices the wages are increased by 20%, the real wage increase **[1]**

a) 2 b) 30

c) 10 d) 20

6. Index Number reveals the state of **[1]**

a) None b) Inflation

c) Deflation d) Both

7. Statistics is useful for: **[1]**

a) All of these b) General masses

c) Economists d) Traders

8. A table should be: **[1]**

a) All of these b) Attractive

c) Comparable d) As per Objective

9. A weighted aggregate price index where the weight for each item is its current-period quantity is called the **[1]**

a) Laspeyres Index b) Paasche Index

c) Consumer Price Index d) Aggregate index

10. Find out Karl Pearson's coefficient of correlation in the following series relating to prices and demand of a commodity. **[1]**

| Price (Rs.) | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| Demand | 30 | 29 | 29 | 25 | 24 | 24 | 24 | 21 | 18 | 15 |

a) 0.92 b) 0.94

c) 0.98 d) 0.96

11. Can the CPI for urban non-manual employees represent the changes in the cost of living of the President of India? **[3]**

12. Find out the weighted arithmetic mean from the following data. **[3]**

| **Books** | **Price per Book (X)** | **Number Sold (W)** |
|---|---|---|
| Statistic (S) | 20 | 40 |
| Physics (P) | 30 | 25 |
| Economics (E) | 15 | 12 |
| Commerce (C) | 25 | 13 |
| Chemistry (Ch) | 25 | 10 |

OR

There are two factories employing 100 and 80 men, respectively. If the arithmetic mean of their monthly salaries are Rs.575 and Rs.625, then find the arithmetic mean of the salaries of both the factories together.

13. Convert the following inclusive series into exclusive series. **[4]**

| Class Interval | 1-5 | 6-10 | 11-15 | 16-20 | 21-25 |
|---|---|---|---|---|---|
| Number of Workers | 10 | 15 | 20 | 25 | 30 |

14. The following data shows the number of cars manufactured by Maruti Ltd, Tata Motors and Hyundai in the year 2015-16. Represent it with the help of a pie-diagram. **[4]**

Production of Cars (in Rs.)

| | |
|---|---|
| Maruti Limited | 15,75,000 |
| Tata Motors | 7,25,000 |
| Hyundai | 5,50,000 |

OR

Briefly discuss important guidelines while constructing graphs.

15. Explain law of statistical regularity and law of inertia of large numbers in short. **[4]**

16. From the data given below, calculate Karl Pearson's coefficient of correlation between density of population and death rate by step deviation method. **[6]**

| **Region** | **Area(in sq km)** | **Population** | **Death** |
|---|---|---|---|
| A | 200 | 40000 | 480 |
| B | 150 | 75000 | 1200 |
| C | 120 | 72000 | 1080 |
| D | 80 | 20000 | 280 |

17. Calculate the upper and lower quartiles for the following frequency distribution. **[6]**

| **Class Interval** | **Frequency (f)** |
|---|---|
| 13-25 | 6 |
| 25-37 | 11 |
| 37-49 | 23 |
| 49-61 | 7 |
| 61-73 | 3 |
| **Total** | **50** |

OR

Calculate arithmetic mean with the help of following data using step deviation method.

| **Marks (Less than)** | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|
| **Number of Students** | 3 | 10 | 20 | 25 | 28 | 30 |

## Section B

18. Subsidy on the production of a commodity causes: **[1]**

a) increase in supply
b) no change in supply
c) decrease in supply
d) Contraction of supply

19. If MOC increases, the shape of PPC will be **[1]**

a) Concave
b) Inverted
c) Straight
d) Convex

20. _____ refers to the minimum price, fixed by the government, which is above the equilibrium price. **[1]**

a) Price floor
b) Both price floor and minimum support price
c) price ceiling
d) Minimum support price

21. AR curve is more elastic under monopolistic competition than under monopoly due to: **[1]**

a) availability of close substitutes
b) high degree of government control
c) low degree of government control
d) lack of close substitutes

22. Explain the relationship TC, TFC & TVC. **[1]**

a) $\frac{TVC}{TFC}$ = TC
b) TVC $\times$ TFC = TC
c) TVC - TFC = TC
d) TVC + TFC = TC

23. **Assertion (A):** Goods whose demand is higher offer high prices and low profits to the producers. **[1]**

**Reason (R):** The producers will produce those goods which are more in demand and less in supply.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

24. The break- even point where TR=TC, the firm cannot earn abnormal profits **[1]**

a) Can't say

b) False

c) True

d) May be

25. AR is more elastic in monopolistic competition than in monopoly as **[1]**

a) Many close substitutes do not exist in monopolistic competition

b) Many close substitutes do not exist in monopoly competition

c) Many close substitutes exist in monopolistic competition

d) Many close substitutes exist in monopoly competition

26. Which of the following is an example of implicit cost? (Choose the correct alternative) **[1]**

a) Wages paid

b) Cost of Raw material

c) None of these

d) Interest on owner's capital

27. The qty to be sold by a firm under perfect competition is also fixed by the market. **[1]**

a) True

b) Can't say

c) May be

d) False

28. What will happen to the PPC of Bihar if the river Kosi cause a widespread flood? **[3]**

OR

Explain how scarcity and choice go together.

29. What will happen if the price prevailing in the market is **[3]**

i. above the equilibrium price?

ii. below the equilibrium price?

30. The following news was printed in the Economic Times: **[4]**
Petrol and diesel prices were cut by ₹ 2 per litre each as international oil prices slumped to a five-year low.
Use a diagram and economic theory to analyse the impact on the demand for cars in India.

31. The following table shows the total cost schedule for a competitive firm. It is given that the price of the good is ₹ 10. Calculate the profit at each output level. Find the profit-maximizing level of output. **[4]**

| **Output** | **TC (₹)** |
|---|---|
| 0 | 5 |
| 1 | 15 |
| 2 | 22 |
| 3 | 27 |
| 4 | 31 |
| 5 | 38 |
| 6 | 49 |
| 7 | 63 |
| 8 | 81 |
| 9 | 101 |
| 10 | 123 |

OR

The market demand curve for a commodity and the total cost for a monopoly firm producing the commodity is given by the schedules below. Use the information to calculate the following:

| **Quantity** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| **Price** | 52 | 44 | 37 | 31 | 26 | 22 | 19 | 16 | 13 |

| **Quantity** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| **Total Cost** | 10 | 60 | 90 | 100 | 102 | 105 | 109 | 115 | 125 |

Use the information given to calculate the following:

a. The MR and MC schedules

b. The quantities for which MR and MC are equal

c. The equilibrium quantity of output and the equilibrium price of the commodity

d. The total revenue, total cost and total profit in the equilibrium

32. A consumer's budget is ₹ 40. He is buying Good-1 and Good-2. Price of Good-1 is ₹ 8 per unit, and of Good-2 is ₹ 10 per unit. Draw a budget line on the basis of these figures. **[4]**

33. Calculate the MP of variable factor and indicate the various phases of Law of Variable Proportions from the following schedule: **[6]**

| **Units of variable factor** | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **TP (in units)** | 0 | 50 | 110 | 150 | 180 | 180 | 150 |

34. **Answer the following questions** **[6]**

(i) A consumer buys 5 units of good at a price of Rs.4 per unit. When price falls to Rs.3 per unit, he buys 10 units. Calculate price elasticity of demand. **[3]**

(ii) Explain the effect of the following on Price Elasticity of Demand of a commodity. **[3]**

i. Number of substitutes.

ii. Nature of the commodity

**Solution**

**SAMPLE QUESTION PAPER - 4**

**Economics (030)**

**Class XI (2024-25)**

**Section A**

1. **(a)** Both A and R are true and R is the correct explanation of A.

   **Explanation:**

   Both A and R are true and R is the correct explanation of A.

2. **(b)** Current year quantities.

   **Explanation:**

   A weighted aggregative price index using current period quantities as weights is known as Paasche's price index.

3. **(d)** Decreases

   **Explanation:**

   Since the relation between the two variable is positive, if one variable decreases, the other will also decrease.

4. **(a)** 120

   **Explanation:**

   95+60+100+45/80+50+90*100=12

5. **(c)** 10

   **Explanation:**

   Base year price of wages = 100

   Rise in price = 10 % i.e $100 \times \frac{10}{100} = 10$

   Total increment in price = 100+10 = 110

   Rise in wages = 20% i.e $100 \times \frac{20}{100} = 20$

   Total increment in wages = 100+20 = 120

   Hence the real wage increase = 120 - 110 = 10

6. **(d)** Both

   **Explanation:**

   In statistics, we assume that index no .of base year is a hundred. If the index number calculated from data is less than 100, it implies deflation and if it is greater than 100, it implies inflation.

7. **(a)** All of these

   **Explanation:**

Statistics is useful for general masses, traders and economics as a whole.

8. **(a)** All of these

   **Explanation:**

   All of these are included in the characteristics of a table.

9. **(b)** Paasche Index

   **Explanation:**

   IIt's as per definition of Paache's index number.

10. **(b)** 0.94

    **Explanation:**

| Price(X) | DD(Y) | dx | dy | dx2 | dy2 | dxdy |
|---|---|---|---|---|---|---|
| 11 | 30 | -5 | -6 | 25 | 36 | 30 |
| 12 | 29 | -4 | -5 | 16 | 25 | 20 |
| 13 | 29 | -3 | -5 | 9 | 25 | 15 |
| 14 | 25 | -2 | -1 | 4 | 1 | 2 |
| 15 | 24 | -1 | 0 | 1 | 0 | 0 |
| 16 | 24 | 0 | 0 | 0 | 0 | 0 |
| 17 | 24 | 1 | 0 | 1 | 0 | 0 |
| 18 | 21 | 2 | 3 | 4 | 9 | 6 |
| 19 | 18 | 3 | 6 | 9 | 36 | 18 |
| 20 | 15 | 4 | 9 | 16 | 81 | 36 |
|  |  | -1 | 1 | 85 | 213 | 127 |

    $r = \frac{N\sum dxdy - \sum dx \sum dy}{\sqrt{N\sum(dx)^2 - (\sum dx)^2}\sqrt{N\sum(dy)^2 - (\sum dy)^2}}$

    $= \frac{10(27) - (-1)(1)}{\sqrt{10(85) - (-1)^2}\sqrt{10(213) - (1)^2}} = 0.94$

11. The CPI for the urban non-manual employees cannot represent the changes in the cost of living of the President of India. This is because the consumption basket of the non-manual employees consists of different items than those of the consumption basket of the President of India. In fact, in India CPI for industrial workers is the most popular index. This is used by the government to regulate Dearness Allowance (D.A.) to compensate its employees against the price rise.

12. For finding out weighted mean, each item of the series is multiplied by its weights. Here price per book is multiplied by Number of books sold. Number sold is the weight in this

question. Then we have to find $\Sigma XW$ and divide it by $\Sigma W$

**Calculation of Weighted Arithmetic Mean**

| **Books** | **Price per Book (X)** | **Number Sold (W)** | **XW** |
|---|---|---|---|
| S | 20 | 40 | 800 |
| P | 30 | 25 | 750 |
| E | 15 | 12 | 180 |
| C | 25 | 13 | 325 |
| Ch | 25 | 10 | 250 |
| | | $\Sigma W = 100$ | $\Sigma XW = 2305$ |

Now, $\overline{X}_w = \frac{\Sigma XW}{\Sigma W} = \frac{2305}{100} = 23.05$

Hence, required weighted arithmetic mean=23.05

OR

Let $n_1$ be the no. of persons in the first factory and $\overline{X}_1$ be the mean of the first factory workers, and $n_2$ be the number of persons in the second factory and their mean be $\overline{X}_2$

$\because n_1 = 100$ and $\overline{X}_1 = 575$ and $n_2 = 80$ and $\overline{X}_2 = 625$

$\therefore$ Combined Mean$\left(\overline{X}_{1,2}\right) = \frac{n_1\overline{X}_1 + n_2\overline{X}_2}{n_1+n_2}$

$\Rightarrow \quad \overline{X}_{1,2} = \frac{575\times100+625\times80}{100+80} = \frac{57500+50000}{180}$

$= \frac{107500}{180} = 597.2$

$\therefore \quad \overline{X}_{1,2} = 597.2$

13. To convert the inclusive series into exclusive series we need to find

correction factor = 6 -5 /2=0.5

This is added to the upper limit and subtracted from the lower limit of the class.

The exclusive series of the given inclusive series is shown below

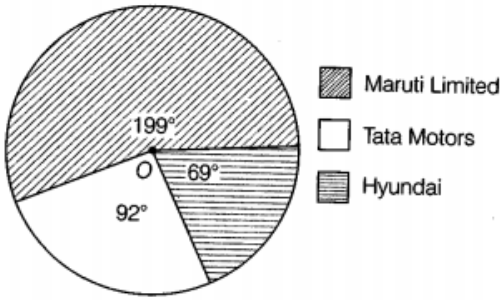
| **Class Interval** | **Frequency (f)** |
|---|---|
| 0.5-5.5 | 10 |
| 5.5-10.5 | 15 |
| 10.5-15.5 | 20 |
| 15.5-20.5 | 25 |
| 20.5-25.5 | 30 |
| **Total** | 100 |

14.

| **Name of the Company** | **Production** | percentage values | **Angle (in degree)** |
|---|---|---|---|
| Maruti Limited | 15,75,000 | $\frac{15,75,000}{28,50,000} \times 100 = 55.26$ | $\frac{55.26\times360}{100} = 199^\circ$ |

| | | | |
|---|---|---|---|
| Tata Motors | 7,25,000 | $\frac{7,25,000}{28,50,000} \times 100 = 25.43$ | $\frac{25.43 \times 360}{100} = 92^\circ$ |
| Hyundai | 5,50,000 | $\frac{5,50,000}{28,50,000} \times 100 = 19.3$ | $\frac{19.3 \times 360}{100} = \sim 69^\circ$ |
| **Total** | 28,50,000 | | $360^\circ$ |

In the above table, we have calculated the percentage values of the production figures first and then we have computed the angle in degrees for each value. The pie diagram for the above data is given below:




OR

The following general guidelines are taken into consideration while preparing graphs:

1. ***Title:*** Each graph should have a suitable title. It may be given either at the top of the graph or below it. The title must convey the main the me which the graph intends to portray.
2. ***Size:*** The size and portion of each component of a graph should be such that all the relevant characteristics of the data are properly displayed and can be· easily understood.
3. ***Proportion of length and breadth:*** An appropriate proportion between the length and breadth of the graph should be maintained. As such there are no fixed rules about the ratio of length to width.
4. ***Proper scale:*** There are again no fixed rules for selection of scale. The graph should neither be too small nor too large. The scale for the graph should be decided after taking into consideration the magnitude of data and the size of the paper on which it is to be drawn. The scale showing the values as far as possible should be in even numbers or in multiples of 5, 10, 20, and so on. The scale should specify the size of the unit and the nature of data it represents, for example, 'millions of tone’s', in Rs. thousand, and the like. The scale adopted should be indicated on both vertical and horizontal axes if different scales are used. Otherwise, it can be indicated at some suitable place on the graph paper.
5. ***Footnotes and source note:*** To clarify or elucidate any points which need further explanation but cannot be shown in the graph, footnotes are given at the bottom of the graphs. ***6. Index:*** A brief index explaining the different types of lines, shades, designs, or colours used in the construction of the graph should be given to understand its contents.

6. ***Simplicity:*** Graphs should be prepared in such a way that they can be understood easily. To keep it simple, too much information should not be loaded in a single graph as it may create confusion. Thus if the data are large, then it is advisable to prepare more than one graph, each depicting some identified characteristic of the same data.

15. 1. **Law of statistical regularity:** This law is formulated on the theory of probability. According to this law, if a random sample of adequate size is selected from a large population, it tends to possess the same characteristics as those of the population. It implies that a sample can give an approximately equal value of entre population if sample is selected at random. For example, if 100 girls are selected form a group of 1000 and their heights are taken then average height obtained will be approximately equal to average height obtained by sum of 5000 girls.
    2. **Law of inertia of large numbers:** This law is a corollary to law of statistical regularity. It states that the averages obtained from a large number are more stable than the aggregates or averages obtained from a small number. If a coin is tossed 10 times it is possible that one gets 9 heads and one tail but if it is tossed 1000 times, figure will be nearer to 500 for both.

16.

| **Region** | **Density(X)** | **dx(X - A), A = 500** | **dx' $\left(\frac{dx}{c_1}\right)$, $c_1$ = 50** | **dx'$^2$** | **Death Rate(Y)** | **dy(Y - A), A = 16** | **dy' $\left(\frac{dy}{c_2}\right)$, $c_2$ = 1** | **dy'$^2$** | **dx'dy'** |
|---|---|---|---|---|---|---|---|---|---|
| A | 200 | -300 | -6 | 36 | 12 | -4 | -4 | 16 | 24 |
| B | 500 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 |
| C | 600 | 100 | 2 | 4 | 15 | -1 | -1 | 1 | -2 |
| D | 250 | -250 | -5 | 25 | 14 | -2 | -2 | 4 | 10 |
| | | | Σdx' = -9 | Σ dx'$^2$ = 65 | | | Σdy' = -7 | Σ dy'$^2$ = 21 | Σ dx'dy' = 32 |

Density is calculated as $\frac{population}{area}$

Death Rate is calculated as $\frac{death}{population} \times 100$

Here, Σdx' = -9, Σdx'$^2$ = 65, Σdy' = -7, Σdy'$^2$ = 21, Σdx 'dy' = 32

Now, r = $\frac{\Sigma dx'dy' - \frac{\Sigma dx' \times \Sigma dy'}{n}}{\sqrt{\sum dx'^2 - \frac{(\Sigma dx')^2}{n}} \times \sqrt{\Sigma dy'^2 - \frac{(\Sigma dy')^2}{n}}}$

$= \frac{32 - \frac{(-9 \times -7)}{4}}{\sqrt{65 - \frac{(-9)^2}{4}} \times \sqrt{21 - \frac{(-7)^2}{4}}}$

$= \frac{32-15.75}{\sqrt{65-20.25}\times\sqrt{21-12.25}}$

$= \frac{16.25}{\sqrt{44.75}\times\sqrt{8.75}} = \frac{16.25}{6.69\times2.96} = \frac{16.25}{19.80} = 0.82$

- Therefore, Karl Pearson's coefficient of correlation between density of population and death rate is 0.82.
- Interpretation of r: There is a high degree of positive correlation between density of population and death rate.

17.

| Class Interval | Frequency (f) | Cumulative Frequency (cf) |
|---|---|---|
| 13-25 | 6 | 6 |
| 25-37 | 11 | 17 |
| 37-49 | 23 | 40 |
| 49-61 | 7 | 47 |
| 61-73 | 3 | 50 |
| | $n = \Sigma f = 50$ | |

**Calculation of Upper and Lower Quartiles**

| Lower Quartile | Upper Quartile |
|---|---|
| Lower Quartile number $(q_1)$ $=$ Size of $\left(\frac{n}{4}\right) th\ item$ | $Upper\ Quartile\ number\ (q_3)$ $=$ Size of $3\left(\frac{n}{4}\right) th\ item$ |
| $= \left(\frac{50}{4}\right)$ th item $= 12.5th\ item$<br>cf just greater than 12.5 is 17 and the corresponding class is 25-37.<br>So, $l_1$=25<br>cf =6, f=11 and c=12<br>$\therefore Q_1 = l_1 + \frac{\frac{n}{4}-cf}{f} \times c$<br>$= 25 + \frac{12.5-6}{11} \times 12 = 25 + \frac{6.5}{11}$<br>$\times 12 = 25 + 7.09$<br>$\Rightarrow Q_1$=32.09 | $=$ Size of $3\left(\frac{50}{4}\right) th\ item$<br>$= 37.5th\ item$<br>cf just greater than 37.5 is 40 and corresponding class is 37-49.<br>So, $l_1$=37, cf=17<br>f=23<br>c=12<br>$\therefore Q_3 = l_1 + \frac{\frac{3n}{4}-cf}{f} \times c$<br>$= 37 + \frac{37.5-17}{23} \times 12 = 37$<br>$+ \frac{20.5}{23} \times 12$<br>=37 + 10.70 $\Rightarrow$ $Q_3$=47.70 |

OR

The given data is less than type hence, first of all convert the less than cumulative frequency series into an ordinary series and then calculate the value of arithmetic mean. For the calculation of Arithmetic Mean let A =25

**Calculation of Arithmetic Mean using step deviation method**

| Marks | Frequency (f) | Mid-Value (m) m=(L1+L2)/2 | dm=m-A (A=25) | $d'm = \frac{dm}{c}$ (c=10) | fd'm |
|---|---|---|---|---|---|
| 0-10 | 3 | 5 | -20 | -2 | -6 |
| 10-20 | 10-3=7 | 15 | -10 | -1 | -7 |
| 20-30 | 20-10=10 | 25 | 0 | 0 | 0 |
| 30-40 | 25-20=5 | 35 | +10 | +1 | +5 |
| 40-50 | 28-25=3 | 45 | +20 | +2 | +6 |
| 50-60 | 30-28=2 | 55 | +30 | +3 | +6 |
| | $\Sigma f = 30$ | | | | $\Sigma fd'm = +4$ |

Here,

A=25 , $\Sigma f = 30$ , $\Sigma fd'm = +4$ , c=10

Now, $\overline{X} = A + \frac{\Sigma fd'm}{\sum f} \times c = 25 + \frac{4}{30} \times 10$

=25+1.33=26.33

***Therefore,arithmetic mean of the given data is 26.33***

**Section B**

18. **(a)** increase in supply

    **Explanation:**

    The subsidy is offered to the producers to increase the production of the commodity when it is economically not viable for the producers to do so at the existing market price. When the subsidy is offered, the supply curve of the commodity shifts to the right.

19. **(a)** Concave

    **Explanation:**

    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 units of a commodity have to be sacrificed to gain an additional unit of another commodity.PPF is concave shaped because of increasing marginal opportunity costs, i.e. more and more units of one commodity are sacrificed to gain an additional unit of another commodity.

20. **(b)** Both price floor and minimum support price

    **Explanation:**

    **Price floors** are sometimes called “price supports,” because they support a (minimum) price by preventing it from falling below a certain level. The price is set above the equilibrium price for the benefit of the suppliers or the producers.

21. **(a)** availability of close substitutes

    **Explanation:**

Demand for goods which have close substitute is relatively more elastic. When the price of such good rises, the consumers have the option of shifting to its substitute.

22.

**(d)** TVC + TFC = TC

**Explanation:**

TC is the sum of total fixed cost and total variable cost at various levels of output. Since TFC remains same at all levels of output , the change in TC is entirely due to TVC. Therefore the vertical distance between TC and TFC curve is equal to TVC.

23.

**(d)** A is false but R is true.

**Explanation:**

Goods whose demand is higher offer high prices and high profits to the producers. The producers will produce those goods which are more in demand and less in supply.

24.

**(c)** True

**Explanation:**

The firm can earn abnormal profits only when TR > TC

25.

**(c)** Many close substitutes exist in monopolistic competition

**Explanation:**

In monopoly, there is a single seller and no close substitutes are available for the product. So the customer cannot shift to any other product(as there are no substitutes) if the monopolist increases the price of the product. In such a case the demand is less elastic or inelastic. Whereas in monopolistic competition, there are large number of sellers and substitutes are available, so the customer will shift to substitute product if there is a increase in price. As such in this situation the demand is more elastic.

26.

**(d)** Interest on owner's capital

**Explanation:**

Interest on owner's capital

27.

**(d)** False

**Explanation:**

The firm is free to sell any qty under perfect competition.

28. PPC is a graph that shows the maximum number of possible units a company can produce if it only produces two products using all of its resources efficiently.

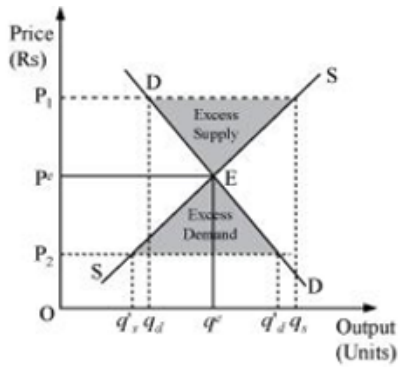
i. Widespread floods in the river will lead to the destruction of resources.

ii. It there is the destruction of resources the PPC will shift to the left.

OR

Scarcity refers to the basic economic problem, the gap between limited – that is, scarce – resources and theoretically limitless wants. Resources are not only scarce but also have alternative uses i.e., land can be used for producing wheat or for constructing warehouses or factories. Hence, it leads to a problem of choice. However, if resources were not scarce one could have anything, anytime and then there would have been no problem of choice.

29. i. If the market price is above the equilibrium price, there occurs the situation of excess supply (where market supply> market demand)



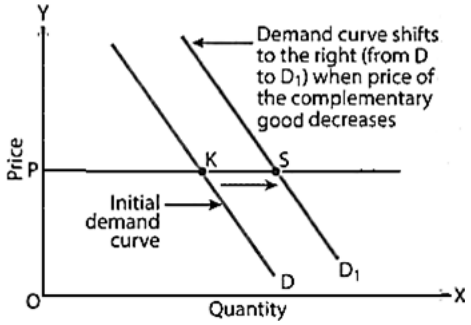

In the given figure, the equilibrium price and quantity is demoted by $P^e$ and $q^e$.

Let us assume that the market price ($P_1$) is above the equilibrium price $P^e$. Now, according to the demand curve, the quantity demanded is $q_d$. Whereas, according to the supply curve, the quantity supplied is $q_s$. Thus, there exists a situation of excess supply equivalent to ($q_s$ - $q_d$). The pressure of excess supply reduces the price.

ii. If the market price is below the equilibrium price, there occurs the situation of excess demand (where market demand > market supply)

Let us assume that the market price $P_2$ is below the equilibrium price $P^e$. According to the demand curve, the quantity demanded is q'd. Whereas, according to the supply curve, the quantity supplied is q's. So, it can be seen that there emerges the situation of excess demand equivalent to (q'd - q's).

30. When the prices of petrol and diesel are cut, the demand for cars is expected to rise. Because car and petrol are complementary goods. It implies that demand curve for cars will shift to the right. More cars are demanded at their existing price.




Initially PK cars were purchased. As price of petrol and diesel decreases, PS cars are

purchased even when price of cars is constant. Accordingly, demand curve for cars shifts forward from D to $D_1$.

31.

| Quantity Sold | Price | TC | TR = P × Q | Profit = TR - TC |
|---|---|---|---|---|
| 0 | 10 | 5 | 10 × 0 = 0 | 0 - 5 = -5 |
| 1 | 10 | 15 | 10 × 1 = 10 | 10 - 15 = -5 |
| 2 | 10 | 22 | 10 × 2 = 20 | 20 - 22 = -2 |
| 3 | 10 | 27 | 10 × 3 = 30 | 30 - 27 = 3 |
| 4 | 10 | 31 | 10 × 4 = 40 | 40 - 31 = 9 |
| 5 | 10 | 38 | 10 × 5 = 50 | 50 - 38 = 12 |
| 6 | 10 | 49 | 10 × 6 = 60 | 60 - 49 = 11 |
| 7 | 10 | 63 | 10 × 7 = 70 | 70 - 63 = 7 |
| 8 | 10 | 81 | 10 × 8 = 80 | 80 - 81 = -1 |
| 9 | 10 | 101 | 10 × 9 = 90 | 90 - 101 = -11 |
| 10 | 10 | 123 | 10 × 10 = 100 | 100 - 123 = -23 |

Total revenue is the total receipts a seller can obtain from selling goods or services to buyers. It can be written as P × Q, which is the price of the goods multiplied by the quantity of the sold goods.

Profit maximizing output is where the difference between TR and TC is the maximum. This exists at 5 units of output, where the firm is earning a profit of Rs 12.

OR

a.

| Quantity (units) | Price / AR (Rs) | TR = P × Q (Rs) | MR = $TR_n$ - $TR_{n-1}$ | TC (Rs) | MC = $TC_n$ - $TC_{n-1}$ (Rs) |
|---|---|---|---|---|---|
| 0 | 52 | 0 | - | 10 | 10 |
| 1 | 44 | 44 | 44 | 60 | 50 |
| 2 | 37 | 74 | 30 | 90 | 40 |
| 3 | 31 | 93 | 19 | 100 | 10 |
| 4 | 26 | 104 | 11 | 102 | 2 |
| 5 | 22 | 110 | 6 | 105 | 3 |
| 6 | 19 | 114 | 4 | 109 | 4 |
| 7 | 16 | 112 | -2 | 115 | 6 |
| 8 | 13 | 104 | -8 | 125 | 10 |

b. MR equals MC at the $6^{th}$ unit of output i.e., 4.

c. At equilibrium, MR equals MC, and here MR equals MC at the $6^{th}$ unit of output, where MC is rising and greater than MR. Thus, the equilibrium price is Rs 19.

d. TR = Rs 114

TC = Rs 109

Total profit = TR – TC

= Rs 114 – 109 = Rs 5, At any other level of output, Profit will be less than ₹5.

32. Let $X_1$ denotes quantity of Good-1 and $X_2$ denotes quantity of Good-2.

Given,

Consumer's budget, i.e ., consumer's income (Y) = ₹ 40

Price of Good-1 ($P_1$) = ₹ 8 per unit

Price of Good-2 ($P_2$) = ₹ 10 per unit

$P_1X_1 + P_2X_2 = Y$

$8X_1 + 10X_2 = 40$

When $X_2 = 0$

$8X_1 = 40$

$\Rightarrow X_1 = 5$

Thus, when the entire income of the consumer is spent on Good-1, he can buy 5 units of Good-1.

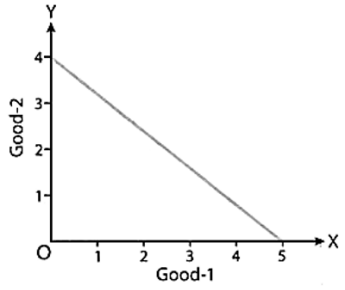
When $X_1 = 40$

$\Rightarrow X_2 = 4$

Thus, when the entire income of the consumer is spent on Good-2, he can buy 4 units of Good-2.

Accordingly, the budget line touches 4 units on Y-axis and 5 units on X-axis, as in figure.

Since price ratio remains constant, budget line is a straight line.




33. Law of variable proportions occupies an important place in economic theory. This law examines the production function with a one-factor variable, keeping the quantities of other factors fixed. In other words, it refers to the input-output relation when output is increased by varying the quantity of one input.

| **Variable Factors (VF)** | **TP (in units) (TP)** | **MP (in units) $MP_n = TP_n - TP_{n-1}$** | **Stage** |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 0 | 0 | - | |
| 1 | 50 | 50 | 1st (Increasing returns to a factor) |
| 2 | 110 | 60 | |
| 3 | 150 | 40 | |
| 4 | 180 | 30 | 2nd (Diminishing returns to a factor) |
| 5 | 180 | 0 | |
| 6 | 150 | -30 | 3rd (Negative returns to a factor) |

34. Answer the following questions

(i) Price elasticity of demand in this question is calculated as follows:

| Price (Rs.) | Demand (units) |
|---|---|
| 4 (P) | 5 (Q) |
| 3 ($P_1$) | 10 ($Q_1$) |

$\Delta Q = 10 - 5 = 5$

$\Delta P = 3 - 4 = -1$

$E_d = (-)\frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$

$= (-)\frac{5}{5} \times \frac{4}{-1} = 4$

$E_d = 4$ or $E_d > 1$

(ii) i. **Number of substitutes of goods:** Demand for goods which have close substitutes (like tea and coffee) is relatively more elastic, because when the price of such a good rise, the consumers have the option of shifting to its substitute. Goods without close substitutes like cigarettes etc are generally found to be less elastic or inelastic in demand. Thus, the availability of close substitutes makes demand sensitive to change in prices.

ii. **Nature of the commodity**: Ordinarily, necessaries like salt, matchboxes, medicines etc have inelastic demand as it is required for human survival and its demand does not fluctuate much with a change in price. Luxuries, like air conditioner, costly furniture, car etc have more elastic demand as compared to the demand for comforts. Comforts like, cooler, fans etc have an elastic demand as consumers can postpone their consumption.