CBSE Class 11 Economics

Sample Paper 04 (2020-21)

Maximum Marks: 80

Time Allowed: 3 hours

General Instructions:

i. This question paper contains two parts: Part A - Statistics (40 marks) and Part B - Micro Economics (40 marks).
ii. Marks for questions are indicated against each question.
iii. Question No. 1-7 and Question No. 15 – 21 (including two Case Based Questions) are 1 mark questions and are to be answered in one word/sentence.
iv. Case Based Questions (CBQ's) are Question No. 7 and Question No. 15.
v. Question No. 8-9 and Question No. 22 – 23 are 3 marks questions and are to be answered in 60 - 80 words each.
vi. Question No. 10-12 and Question No. 24 – 26 are 4 marks questions and are to be answered in 80-100 words each.
vii. Question No. 13-14 and Question No. 27 – 28 are 6 marks questions and are to be answered in 100-150 words each.
viii. Answers should be brief and to the point and the above word limit be adhered to as far as possible.

PART - A (STATISTICS)

1. Which of the following measure is an absolute measure of dispersion?
   a. Coefficient of variation
   b. Standard deviation
   c. Coefficient of mean deviation
   d. Coefficient of range

OR

Which measure of dispersion has a different unit other than the unit of measurement of

values?

a. Standard deviation
b. coefficient of variation
c. Mean deviation
d. Range

2. Fill in the blanks:
   _____ activities are included in National Income.
3. Calculate the range of class interval 15-35
   a. 25
   b. 20
   c. 10
   d. 50
4. Index number for the base period is always taken as
   a. 100
   b. 1
   c. 50
   d. 200
5. In Laspeyre's index number, the weight pertains to
   a. None of the given
   b. Both Base year and current year quantities
   c. Current year quantities
   d. Base year quantities
6. If two variables oppose each other then the correlation will be
   a. Negative Correlation
   b. Positive Correlation
   c. No Correlation
   d. Perfect Correlation
7. **Read the following Case Study carefully and answer the questions on the basis of the same:**
   A survey that is conducted with few individuals of the target population or the sample of a survey, in order to test and refine the survey instruments (questionnaire and instruction manual, data processing manual and programmes) before the main data collection across the target population or the full sample. Pilot experiments are

frequently carried out before large-scale quantitative research, in an attempt to avoid time and money being used on an inadequately designed project. A pilot study is usually carried out on members of the relevant population. A pilot study is often used to test the design of the full-scale experiment which then can be adjusted. It is a potentially valuable insight and, should anything be missing in the pilot study, it can be added to the full-scale (and more expensive) experiment to improve the chances of a clear outcome.

i. _____ data is collected by someone else and used by the investigator. (Primary/ Secondary)
ii. Error of _____ arises when the respondents do not offer the required information. (Non-response/ Calculation)
iii. Pilot survey is conducted to assess the _____ of questions. (Quantity/Quality)
iv. _____ is a person who helps the investigator in collecting the data. (Enumerator/ Respondent)

8. Prepare the frequency array of marks obtained by 25 students of a class in economics test 20,15, 20, 30, 40, 25, 25, 30, 40, 20, 35, 35, 50,15, 50, 25, 40, 40, 30, 50, 25, 30, 30,15, 45.
9. Calculate mode from the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
Number of Students	4	10	20	35	15	6

OR

The following table shows monthly wages of 10 workers. Calculate lower and upper quartiles.
120, 150, 170, 180, 181, 187, 190, 192, 200, 210.

10. Calculate the standard deviation from the given data. 10, 15, 20, 25, 30, 35, 40.
11. Give three examples where deviation bar diagram can be used.

OR

What are the general rules of tabulation?

12. The coefficient of variations of two series are 58% and 69% and their standard deviations are 21.2 and 15.6. What are their mean?
13. The following table shows the distribution of 105 families according to their expenditure

per week. Number of families corresponding to the expenditure groups Rs.10-20 and t 30-40 are missing from the table. The median and mode for the distribution are 25 and 24, respectively. Calculate the missing frequencies.

Expenditure (in Rs.)	0-10	10-20	20-30	30-40	40-50
Number of Families	14	?	27	?	15

OR

From the given series, find the value of median graphically with the help of :

i. Less than ogive
ii. More than ogive
iii. More than and less than ogives

Wages (in Rs.)	**Number of Workers**
0-5	4
5-10	6
10-15	10
15-20	10
20-25	25
25-30	24
30-35	20
35-40	1

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

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

PART - B (MICRO ECONOMICS)

15. PPF can be convex to the point of origin due to:
    a. increasing MOC
    b. decreasing MRT
    c. constant MRT
    d. increasing MRT
16. Other name by which average revenue curve known:
    a. Average cost curve
    b. Demand curve
    c. Profit curve
    d. Indifference curve
17. **Assertion:** Budget line can shift to the right when the consumer is able to increase the consumption of both goods.
    Reason: When the level of income increases, the consumer will be able to buy more bundles of goods, which were previously not possible.
    a. Assertion and reason both are correct statements and reason is correct explanation for assertion.
    b. Assertion and reason both are correct statements but reason is not correct explanation for assertion.
    c. Assertion is correct statement but reason is wrong statement.
    d. Assertion is wrong statement but reason is correct statement.

OR

Assertion: Budget line can shift to the right when the consumer is able to increase the consumption of both goods.
Reason: When the prices of both goods fall, the consumer can not purchase more goods with the same income level.

a. Assertion and reason both are correct statements and reason is correct explanation for assertion.
b. Assertion and reason both are correct statements but reason is not correct explanation for assertion.
c. Assertion is correct statement but reason is wrong statement.
d. Assertion is wrong statement but reason is correct statement.

18. **Assertion:** Consumer is willing to sacrifice less and less units of a good to gain an additional unit of the other good.
    Reason: The utility that he gets from consuming an additional unit of a good goes on diminishing.
    a. Assertion and reason both are correct statements and reason is correct explanation for assertion.
    b. Assertion and reason both are correct statements but reason is not correct explanation for assertion.
    c. Assertion is correct statement but reason is wrong statement.
    d. Assertion is wrong statement but reason is correct statement.
19. Which of the following is not a characteristic feature of imperfect competition?
    a. Prices vary from seller to seller
    b. All the products are homogeneous
    c. Profits of the seller is included in the price
    d. None of above
20. For a perfectly competitive firm, price is:
    a. equal to MR
    b. equal to AR and equal to MR
    c. greater than MR
    d. equal to AR
21. **Read the following Case Study carefully and answer the questions on the basis of the same:**
    Law of demand fails when consumers judge the quality of a commodity by its price. It is an irrational judgement. Perhaps, it is owing to a huge price difference between organic and non-organic products in the market, that Richer sections of the society consider organic products as of very high quality. Accordingly, the quantity demand for these products has tended to rise even when their prices are extremely high.
    i. Which of the following pairs of commodities is an example of substitutes?
        a. Coffee and Milk
        b. Diamond and soap
        c. Pen and Ink
        d. mustard oil and coconut oil
    ii. The demand curve is upward sloping for:

a. normal goods
b. inferior goods
c. giffen goods
d. substitute goods

iii. When the law of demand fails, demand curve slopes _____ (upward/downward).

iv. In case of _____ goods, the income effect is higher than the substitution effect. (Inferior/ Giffen)

22. Define marginal opportunity cost along with a PPC.

OR

Why does an economic problem arise? Explain the problem of 'How to Produce'?

23. Suppose a consumer wants to consume two goods which are available only in integer units. The two goods are equally priced at Rs 10 and the consumer's income is Rs 40.
    i. Write down all the combinations that are available to the consumer.
    ii. Among the combinations that are available to the consumer, identify those which cost her exactly Rs 40.
24. Market for a good is in equilibrium. What is the effect on equilibrium price and quantity if both market demand and market supply of the good increase in the same proportion? Use diagram
25. Under what condition increase in demand would not make any effect on equilibrium quantity?

OR

What is the Perfect Competition? Explain price determination under Perfect Competition.

26. 5% fall in the price of a good raises its demand from 300 units to 318 units. Calculate its Price Elasticity of Demand.
27. Answer any two of the following questions:
    a. Give the behaviour of Marginal Product and Total Product as more and more units of only one input are employed while keeping other inputs as constant.
    b. State different phases of the Law of Variable Proportions on the basis of Total Product. Use the diagram.
    c. A firm may undertake production even in a state of losses. Comment.

d. Explain how technological advancement brings a positive impact in the supply of a given product.

28. Answer the following questions:
    a. The price of a commodity falls by 15% and its supply falls from 200 units to 155 units. Calculate its elasticity of supply.
    b. Why MC curve is 'U' shaped in the short run?
    c. What will be the effect of the following changes in total revenue on marginal revenue?
        i. Total revenue increase at a decreasing rate.
        ii. Total revenue increase at a constant rate.

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Solution

PART - A (STATISTICS)

1. (b) Standard deviation

   Explanation: Range, interquartile range, and standard deviation are the three commonly used measures of dispersion. Absolute Measure of Dispersion gives an idea about the amount of dispersion in a set of observations. These quantities measure the dispersion in the same units as the units of original data.

   OR

   (b) coefficient of variation

   Explanation: Coeffiicient of variation indicates the relationship between the standard deviation and the arithmetic mean expressed in terms of percentage. As it is expressed in percentage, it has got a different unit other than the unit of measurement of values. The series for which coefficient of variation is greater is said to be more variable or conversely less stable or less uniform.
2. Economic
3. (b) 20

   Explanation: The Range is the difference between the lowest and highest values.
4. (a) 100

   Explanation: Conventionally, index numbers are expressed in terms of percentage. Of the two periods, the period with which the comparison is to be made, is known as the base period. The value in the base period is given the index number 100. If you want to know how much the price has changed in 2005 from the level in 1990, then 1990 becomes the base. The index number of any period is in proportion with it.Thus an index number of 250 indicates that the value is two and half times that of the base period.
5. (d) Base year quantities

   Explanation: A weighted aggregative price index using base period quantities as weights is known as Laspeyre's price index.

   This method uses the base period quantities as weights.

6. (a) Negative Correlation

   Explanation: Negative correlation implies that high value of one variable will correspond to a low value of another variable and vice versa.

7. i. Secondary
   ii. Non- response
   iii. Quality
   iv. Enumerator

8. We look in the given series and find how frequently each value is repeated and we write its frequency accordingly. As in the question, marks of 25 students are given in the individual series. For converting individual series into frequency array, the tally bar should be used.

   The frequency array of given data is shown below:

Marks	**Tally Bar**	**Frequency (f)**
15	|||	3
20	|||	3
25	||||	4
30	𝍸	5
35	II	2
40	IIII	4
45	I	1
50	III	3
Total		25

9. By observation, the modal class is 30-40, since it has maximum frequency 35.

   Now, l_1=30, f_1=35, f_2=15, f_0=20, and c=10

   where l_1 is the lower limit of the modal class f_1 is the frequency of the modal class f_0 is the frequency of the class preceding the modal class, f_2 is the frequency of the class succeeding the modal class and i is the class interval of the modal class.

   ∴Mode,

   $(M_o) = l_1 + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times c$

$= 30 + \frac{35-20}{2\times35-20-15} \times 10$

$= 30 + \frac{15\times10}{35}$

$= 30 + \frac{150}{35} = 30 + 4.3$

$\therefore$ Mode (M_0)=34.3 marks

OR

S. No.	1	2	3	4	5	6	7	8	9	10
Monthly Wages	120	150	170	180	181	187	190	192	200	210

n = 10

Calculation of Lower and Upper Quartiles

Lower Quartile(Q_1)	**Upper Quartile(Q_2)**
$\therefore Q_1 =$ Size of $\left(\frac{n+1}{4}\right) th\ item$	$Q_3 =$ Size of $3\left(\frac{n+1}{4}\right) th\ item$
$=$ Size of $\left(\frac{10+1}{4}\right) th\ item$	= Size of $3\left(\frac{10+1}{4}\right)$ th item = Size of 8.25th item
=Size of 2.75 th item	= 8th item + 0.25 (size of 9th item - size of 8th item)
=2nd item + 0.75 (Size of 3rd items - size of 2nd item)	= 192 + 0.25(200 - 192) =194
=150 + 0.75(170-150)=165	Q_3=194
Q_1=165	

10. **Calculation of Standard deviation:** Here we are calculating the Standard Deviation by the assumed mean method. We take 25 as the assumed mean here (A). Then we take the deviation of X from the assumed mean (d) and square these deviations and find out their total. The calculations have been shown below

S.No.	**X**	**d(X - A), A = 25**	**d^2**
1	10	-15	225
2	15	-10	100
3	20	-5	25
4	25	0	0
5	30	5	25

6	35	10	100
7	40	15	220
n = 7		$\Sigma d = 0$	$\Sigma d^2 = 700$

$$\sigma = \sqrt{\frac{\Sigma d^2}{n} - \left(\frac{\Sigma d}{n}\right)^2} = \sqrt{\frac{700}{7} - \left(\frac{0}{7}\right)^2} = \sqrt{100}$$

$\therefore \quad \sigma = 10$

11. Deviation bar charts are suitable for presentation of net quantities in excess or deficit such as profit, loss, import, or exports. The excess (or positive) values and deficit (or negative) values are shown above and below the base line respectively. These are also called bilateral bar diagrams. Three examples where these can be used:
    a. To show profit or loss of a company.
    b. To show balance of trade of a country.
    c. To show balance of inflow and outflow of cash in a company.

OR

General rules of a table are as follows:

1. A table should be simple and attractive. There should be no need of further explanations (details).
2. Proper and clear headings for columns and rows should be need.
3. Suitable approximation may be adopted and figures may be rounded off.
4. The unit of measurement should be well defined.
5. If the observations are large in number they can be broken into two or three tables.
6. Thick lines should be used to separate the data under big classes and thin lines to separate the sub classes of data.

12. i. For the first series, we have been given the values of CV and Standard Deviation. By applying the formula for CV, we get

$CV = \frac{\sigma}{\overline{X}} \times 100$, CV = 58 , and σ = 21.2

On substituting the values, we get

$58 = \frac{21.2}{\overline{X}} \times 10$

$\therefore \overline{X} = \frac{21.2}{58} \times 100 = 36.55$

ii. For the second series, we are given the values of CV and standard deviation.

$\text{CV} = \frac{\sigma}{\overline{X}} \times 100$, CV = 69 and σ = 15.6

On substituting the values,

we get $69 = \frac{15.6}{\overline{X}} \times 100$

$\therefore \quad \overline{X} = \frac{15.6}{69} \times 100 = 22.6$

iii. Therefore the Standard deviation for the first series is 36.55 and for the second series is 22.6.

13. Let the frequencies be f_1 for class interval of Rs.10-20 and f_2 for class interval of Rs.30-40.

The cumulative frequency for the given data is calculated as follows:

Expenditure (X)	**Number of Families (n)**	**Cumulative Frequency (f)**
0-10	14	14
10-20	f_1	$14 + f_1$
20-30	27	$41 + f_1$
30-40	f_2	$41 + f_1 + f_2$
40-50	15	$56 + f_1 + f_2$
	$n=56 + f_1 + f_2$	

Calculation of missing frequencies

Median =25 (given)	**Mode =24 (given)**
Since,Median =25,the median lies in the class interval 20-30. Then, l1=20, f=27, cf=14 + f1 and c=10 $\therefore$ Median $(M) = l_1 + \frac{\frac{n}{2} - cf}{f} \times c$ $\Rightarrow 25 = 20 + \frac{\frac{56+f_1+f_2}{2} - (14+f_1)}{27} \times 10$ $\Rightarrow \frac{27(25-20)}{10} = \frac{56+f_1+f_2}{2} - (14 + f_1)$ $\Rightarrow \frac{2 \times 27 \times 5}{10} = 56 + f_1 + f_2 - 28 - 2f_1$ $\Rightarrow$ 27=28 + f2 - f1 $\Rightarrow$ f1 - f2 =1 ..... [eq. i]	Mode =24, the mode lies in the class interval 20-30. Then, l1=20, f1=27, f0=f1, f2=f2 and h=10 $\therefore \text{Mode}(M_o) = l_1 + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times c$ $\Rightarrow 24 = 20 + \frac{27 - f_1}{54 - f_1 - f_2} \times 10$ $\Rightarrow 4 = \frac{27 - f_1}{54 - f_1 - f_2} \times 10$ $\Rightarrow$4(54-f1-f2)=10(27-f1) $\Rightarrow$216-4f1+4f2=270-10f1 $\Rightarrow$6f1-4f2=54 $\Rightarrow$3f1-2f2=27 ..... [eq. ii]

Now, we have two equations

f_1-f_2=1 .....(i)

$3f_1$ -$2f_2$ =27 .....(i)

On multiplyng Eq. (i) by 2 and subtracting Eq. from it, we get

$$\begin{array}{rrr} 2f_1 - 2f_2 = 2 \\ 3f_1 - 2f_2 = 27 \\ - \quad + \quad - \end{array}$$

$$-f_1 = -25 \Rightarrow f_1 = 25$$

On putting the value of f_1 in Eq.(i), we get $25 - f_2 = 1 \Rightarrow f_2 = 25 - 1 \Rightarrow f_2 = 24$

Hence, the number of families in the groups Rs. (10-20) and Rs. (30-40) are 25 and 24, respectively.

OR

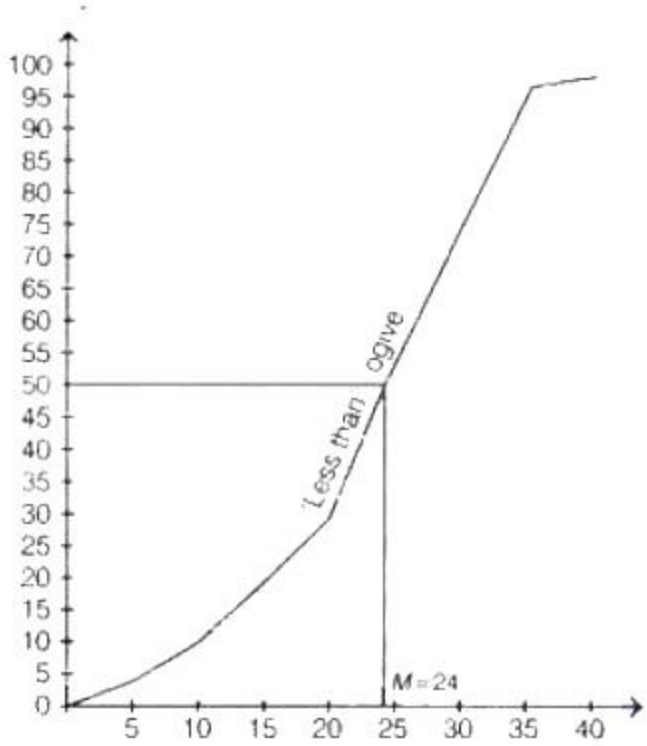
Converting the given distribution into 'less than' and 'more than' cumulative distributions.

Wages	Number of Workers	Wages	Number of Workers
Less than 5	4	More than 0	100
Less than 10	10	More than 5	96
Less than 15	20	More than 10	90
Less than 20	30	More than 15	80
Less than 25	55	More than 20	70
Less than 30	79	More than 25	45
Less than 35	99	More than 30	21
Less than 40	100	More than 35	1

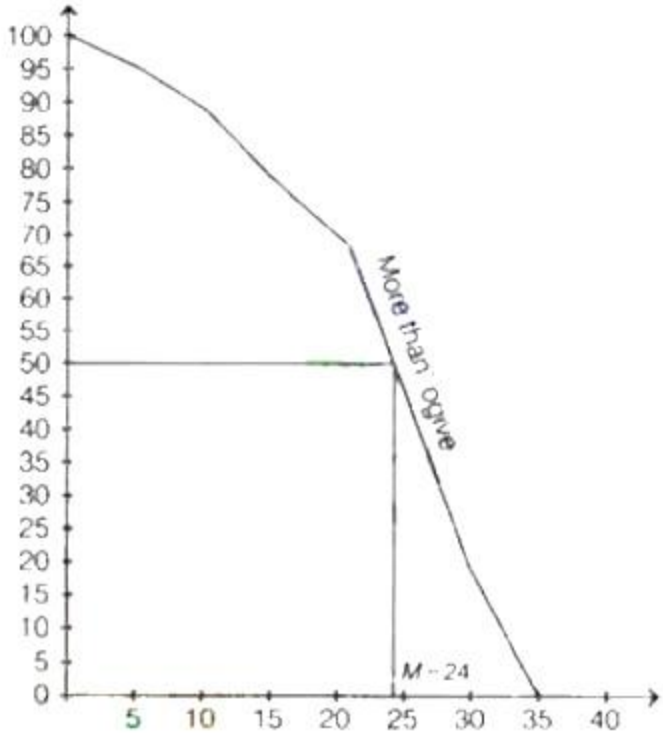
Calculation of median by graphical method

i. **Finding median with the help of 'less than ogive**

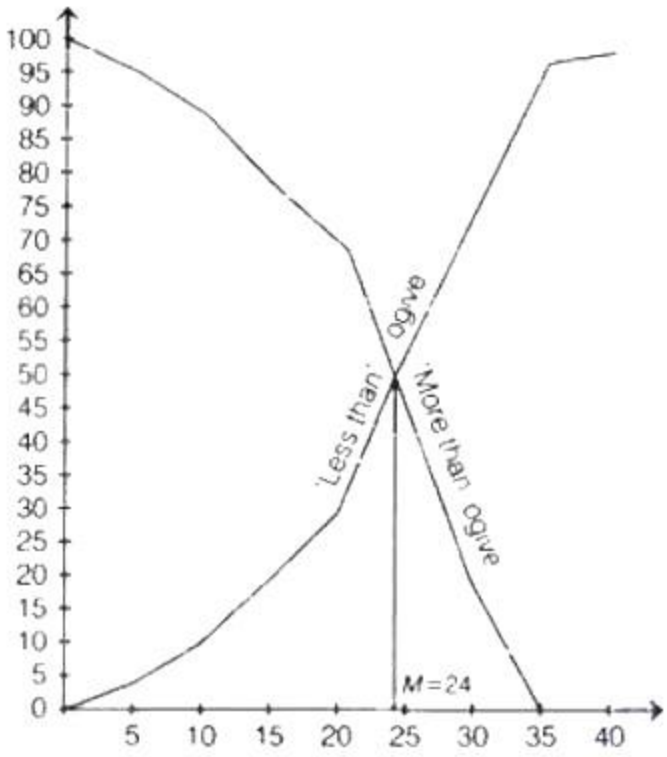
M = Size of (n/2)th items = Size of (100/2)th item = 50th item



ii. **Finding median with the help of 'more than ogive M=50th item**



iii. **Finding median with the help of 'less than' and 'more than' ogives.**



14.

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
			$\Sigma dx'$ = -9	$\Sigma dx'^2$ = 65			$\Sigma dy'$ = -7	$\Sigma dy'^2$ = 21	$\Sigma dx'dy'$ = 32

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

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

Here, $\Sigma dx'$ = -9, $\Sigma dx'^2$ = 65, $\Sigma dy'$ = -7, $\Sigma dy'^2$ = 21, $\Sigma dx'dy'$ = 32

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

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

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

$$= \frac{16.25}{\sqrt{44.75} \times \sqrt{8.75}} = \frac{16.25}{6.69 \times 2.96} = \frac{16.25}{19.80} = 0.82$$

- 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.

PART - B (MICRO ECONOMICS)

15. (b) decreasing MRT

    Explanation: If the slope of PPC decreases i.e change in y/ change in x decreases PPC will be convex to the origin.

16. (b) Demand curve

    Explanation: The average revenue is essentially the price of the commodity. So the AR curve is the same as demand curve.

17. (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

    Explanation: Assertion and reason both are correct statements and reason is correct explanation for assertion.

    OR

    (c) Assertion is correct statement but reason is wrong statement.

    Explanation: When the prices of both goods fall, the consumer can purchase more goods with the same income level.

18. (a) Assertion and reason both are correct statements and reason is correct explanation for assertion.

    Explanation: The consumer is willing to sacrifice less and less units of a good to gain an additional unit of the other good because the utility that he gets from consuming an additional unit of a good goes on diminishing.

19. (b) All the products are homogeneous

    Explanation: The products are not homogeneous in imperfect competition. There is differentiation between the products. Homogeneous products is a feature of perfect

competition.

20. (b) equal to AR and equal to MR

    Explanation: A firm under perfect competition is a price taker. Since market price= AR of the firm, we can state that AR is given to a firm. In case AR is constant, MR is also constant.

21. i. (a) mustard oil and coconut oil
    ii. (b) Giffen Goods
    iii. (c) upward
    iv. (d) Giffen

22. The slope of the production possibility curve is marginal opportunity cost or marginal rate of transformation which refers to the additional sacrifice that a firm makes when they shift resources and technology from the production unit of one commodity to the other commodity in an economy. It is the ratio between loss of output and gain of output when some resources are shifted from use 1 to use- 2.

OR

An economic problem is basically the problem of choice which arises because of the scarcity of resources. Human wants are unlimited but mean to satisfy them are limited. Therefore, all human wants cannot be satisfied with limited means. Wants differ in intensity and limited resources have alternative uses. In such a background, every consumer tries to satisfy his maximum wants. Therefore, one has to choose as to what goods one should consume and in what quantity. On account of scarcity of resources, an economy has to choose between the following:

(i) Which goods should be produced and in what quantity? (ii) What technique should be adopted for production? (iii) For whom the goods should be produced?

'How to Produce' in the context of it is finding out what technique should be adopted for production?

Once the society has decided what goods and services are to be produced and in what quantities, it must then decide how these goods shall be produced. There are various alternative methods of producing a good and the economy has to choose among them. There are two types of techniques. A labour-intensive technique would employ relatively more labour and less capital. On the other hand, capital- intensive technique means more capital and less labour. The choice of technique depends on the prices of the factors of

production.

23. i. Given:

Price of good (P_x) and good (P_y) = Rs 10

Income of consumer = Rs 40

The following combinations are available to the consumer-

First option – (0, 0), (0, 1), (0, 2), (0, 3), (0. 4)

Second option – (1, 0), (1, 1), (1, 2), (1, 3)

Third option – (2, 0), (2, 1), (2, 2)

Fourth option – (3, 0), (3,1)

Fifth option – (4, 0)

ii. The exactly cost of Rs 40, the bundles are (0, 4), (1, 3), (2, 2), (3, 1) and (4, 0).

24. Market equilibrium is determined when the quantity demanded of a commodity becomes equal to the quantity supplied. There is no surplus or shortage in this situation and the market would be considered stable. In other words, consumers are willing and able to purchase all of the products that suppliers are willing and able to produce. Everyone wins.

It considered a balance and is comprised of 3 properties:

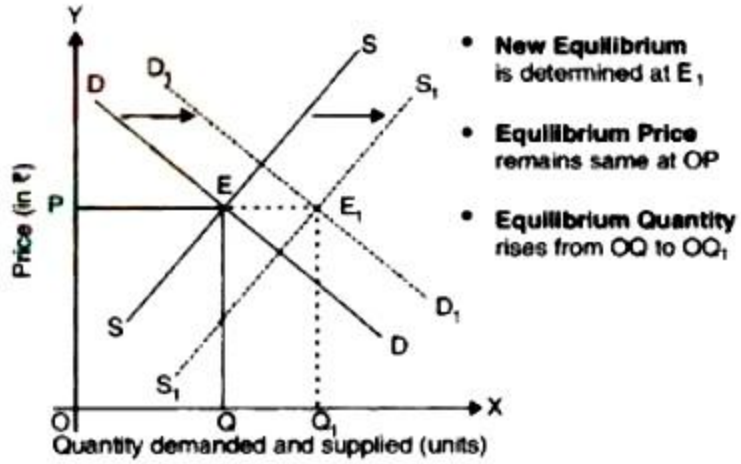
i. The behavior is consistent.

ii. Each participant has no incentive to modify its behavior.

iii. The outcome is due to some dynamic process.

The price determined corresponding to the market equilibrium is known as equilibrium price and the corresponding quantity is known as equilibrium quantity.

i. The equilibrium price will remain unaffected only when: Increase in Demand = Increase in supply.



ii. When an increase in demand is proportionately equal to an increase in supply, then rightward shift in demand curve from DD to D_1D_1 is proportionately equal to the righward shift in supply curve from SS to S_1S_1 (In a Figure). The new equilibrium is determined at E_1. As both demand and supply increase in the same proportion, the equilibrium price remains the same at OP, but the equilibrium quantity rises from OQ to OQ_1.

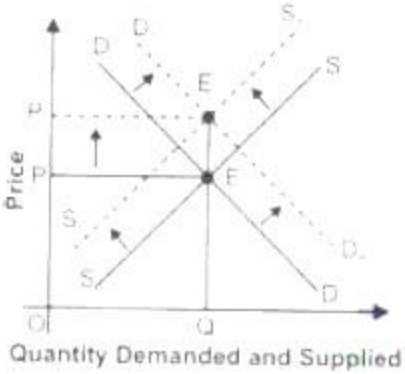
25. Case I: When supply decreases at the same rate as the demand increase. In the given diagram price is measured on vertical axis and quantity demanded and supplied is measured on horizontal axis. Initially, the equilibrium price is OP and equilibrium quantity is OQ.

But when, "demand increases and supply decreases but at the same rate", then,

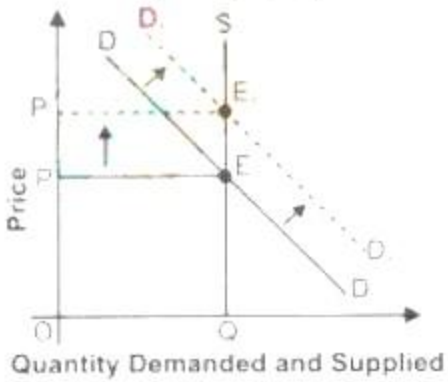
i. Equilibrium price rises from OP to OP1; and

ii. Equilibrium quantity remains constant at OQ.

iii.



Case II: When supply becomes perfectly inelastic In the given diagram price is measured on vertical axis and quantity demanded and supplied is measured on horizontal axis. Initially, the equilibrium price is OP and equilibrium quantity is OQ. But when "supply becomes perfectly inelastic and demand increases" then, (i) Equilibrium price rises from OP to OP1; and (ii) Equilibrium quantity remains constant at OQ.

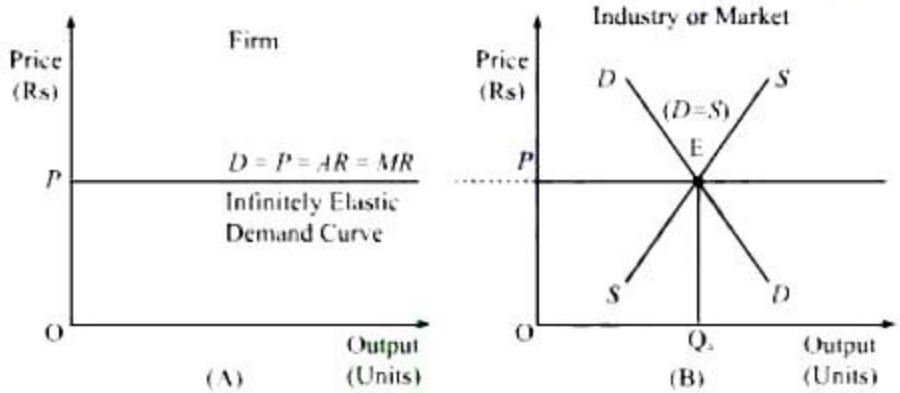


OR

Perfect competition is defined as a market structure that consists of a large number of buyers and sellers such that no individual seller can influence the existing market price of the product. All the sellers in a perfect competition market produce homogenous products; that is, the output of all sellers is similar to each other and each firm sells its output at a uniform price. Factors of production are perfectly mobile under perfect competition and buyers and sellers are fully aware of the price prevailing in the market.

Price Determination under Perfect Competition:

Under perfect competition, the market price, or the equilibrium price, is determined in the industry. Individual firms have no influence on this price. In the industry, the price is determined by the intersection of the market supply and market demand curves. In other words, the price under perfect competition is set at the point where the market supply of the good is equal to the market demand for the good. The individual firms take the market price so determined as fixed and adjust their supply accordingly.



In the figure, part A depicts the infinitely elastic demand curve faced by an individual firm in a perfect competition market. Part B depicts how the market demand and market supply curves interact to determine the market price. The market price OP is determined by the intersection of the market (industry) demand curve DD and market (industry) supply curve SS. The market equilibrium is at point E, where OQx (amount of output) is supplied at the equilibrium market price OP. The price for the commodity is given to an individual firm and no single firm can influence the market price. The firm faces an infinitely elastic demand curve, which suggests that no matter how many units of output are supplied, the price will remain the same. Hence, we can conclude that under a perfect competition market, an individual firm is a price taker and not a price maker.

26. Given,

Percentage change in Price : 5%

Change in Demand = 318 - 300 = 18

Percentage change in quantity demanded = $\frac{18}{300} \times 100 = 6\%$

$$E_d = (-)\frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

$$E_d = -\frac{6}{5}$$

$E_d = (-)1.2$ [more than unit elastic]

27. Answer any two of the following questions:

a. The Law of Variable Proportion shows the impact on output when units of a variable factor are increased, keeping some factors constant in the short-run. The law has three stages.

Stage I Increasing returns to factor In this stage total product tends to rise at an increasing rate due to the increase in Marginal product.

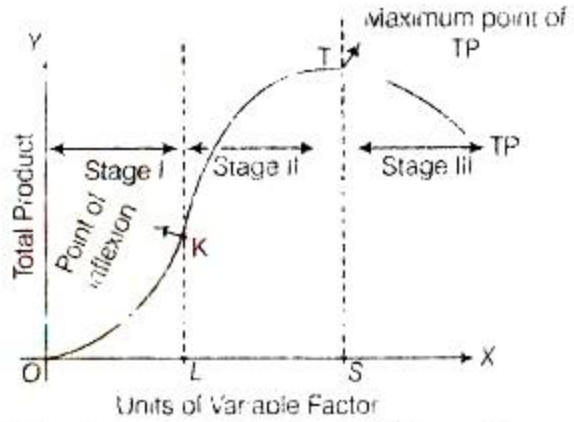
Stage II Decreasing returns to factor In this stage, the total product tends to rise at a diminishing rate due to a decrease in marginal Product.

Stage III Negative returns to factor In this stage TP tends to fall because the marginal product becomes negative.

b. **Stage Ist Increasing returns to factor** In this stage, Total Product increases at an increasing rate.

Stage IInd Diminishing returns to factor In this stage, Total Product increases, but at a diminishing rate. Also, in this stage Total Product reaches its maximum and becomes constant.

Stage IIIrd Negative returns to factor In this stage, Total Product begins to fall.



Behaviour of Total Product in Different Stages

c. Yes. In-state of losses, TR < TC or AR < AC. A firm may strike equilibrium even in this situation because equilibrium is struck when MR = MC and MC is rising. Production continues and equilibrium is struck, so long as variable costs are covered. Total losses

a firm can sustain is up to 'total fixed cost'. Shutdown point occurs when a firm just covers its variable cost.

d. Technological advancement reduces per unit cost and increases the productivity of given factors of production. Due to these reasons production of given product becomes more profitable and therefore the supply of given product will increase.

28. Answer the following questions:

a. Percentage change in price =15%

Percentage change in supply $= \frac{\text{Change in supply}}{\text{Old Quantity}} \times 100$

$= \frac{200-155}{200} \times 100$

$= \frac{45}{200} \times 100 = 22.5\%$

Now,

Elasticity of Supply $= \frac{\%\text{ Change in Quantity Supplyed}}{\%\text{ Change in Price}}$

$= \frac{22.5}{15} = 1.5$

b. The MC is the change in total cost due to change in a unit of variable factor employed. Marginal costs are variable costs consisting of labor and material costs, plus an estimated portion of fixed costs (such as administration overheads and selling expenses). In the short run, as the employment of variable factor increases (fixed cost being constant) in the initial stage MC decreases (owing to increasing returns). But, it finally tends to rise in accordance with the Law of Variable Proportion. Hence, the 'U' shape of MC.

c. Total revenue in economics refers to the total receipts from sales of a given quantity of goods or services.

i. When TR increases at a decreasing rate, MR should decrease but should not become zero or negative.

ii. When TR increases at a constant rate, MR should be constant.