

10	Normal Curves are also known as A)U-Shaped Curves. B)L-Shaped Curves. C)J-Shaped Curves. D)Bell Shape Curves	1																																						
11	Draw a frequency polygon using mid values from the following table <table border="1"> <tr> <td>Marks</td> <td>0-10</td> <td>10-20</td> <td>20-30</td> <td>30-40</td> <td>40-50</td> <td>50-60</td> </tr> <tr> <td>No.of Students</td> <td>5</td> <td>12</td> <td>15</td> <td>22</td> <td>14</td> <td>4</td> </tr> </table>	Marks	0-10	10-20	20-30	30-40	40-50	50-60	No.of Students	5	12	15	22	14	4	3																								
Marks	0-10	10-20	20-30	30-40	40-50	50-60																																		
No.of Students	5	12	15	22	14	4																																		
12	There is a debate competition in your school. Being School Captain, you have been entrusted with the responsibility of selecting the best orator from Class XI for the same. Identify the sampling technique that you would use for this purpose. Critically analyse any three merits	3																																						
13	D.A.V.P.S organised an educational trip to Wagah border for students of class 12th for 160 persons. Out of which 120 were students, 28 were teachers,12(all males)were peons. Out of total persons,32 were females including 2 lady teachers. Present the above information in a table with the help of working note clearly.	3+1																																						
14	Find the median of the following series using graphical method:- <table border="1"> <tr> <td>Age in years</td> <td>More than 80</td> <td>More than 70</td> <td>More than 60</td> <td>More than 50</td> <td>More than 40</td> <td>More than 30</td> <td>More than 20</td> <td>More than 10</td> <td>More than 0</td> </tr> <tr> <td>No of persons</td> <td>0</td> <td>8</td> <td>28</td> <td>73</td> <td>123</td> <td>165</td> <td>200</td> <td>218</td> <td>230</td> </tr> </table>	Age in years	More than 80	More than 70	More than 60	More than 50	More than 40	More than 30	More than 20	More than 10	More than 0	No of persons	0	8	28	73	123	165	200	218	230	4																		
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No of persons	0	8	28	73	123	165	200	218	230																															
15	Find out the mode of the series with grouping method. <table border="1"> <tr> <td>Size</td> <td>0-5</td> <td>5-10</td> <td>10-15</td> <td>15-20</td> <td>20-25</td> <td>25-30</td> </tr> <tr> <td>Frequenc y</td> <td>20</td> <td>24</td> <td>32</td> <td>28</td> <td>20</td> <td>26</td> </tr> </table>	Size	0-5	5-10	10-15	15-20	20-25	25-30	Frequenc y	20	24	32	28	20	26	4																								
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Frequenc y	20	24	32	28	20	26																																		
16	(A) "If all the items in a series are multiplied or divided by the constant then the mean of these observations also get multiplied or divided by it". Prove this statement with suitable example. B) Average marks of 26 students of section a of class XI is 73 and average marks of 24 students of section B of class XI is 86. Find out the average marks of class XI.	3+3																																						
17	Calculate Karl Person's coefficient of correlation for the following data: <table border="1"> <tr> <td>Husband Age</td> <td>30</td> <td>32</td> <td>34</td> <td>35</td> <td>37</td> <td>38</td> <td>40</td> <td>42</td> <td>44</td> </tr> <tr> <td>Wife Age</td> <td>22</td> <td>25</td> <td>27</td> <td>28</td> <td>29</td> <td>30</td> <td>31</td> <td>32</td> <td>33</td> </tr> </table> <p style="text-align: center;">OR</p> Find out the Coefficient of rank correlation between X and Y <table border="1"> <tr> <td>X</td> <td>46</td> <td>56</td> <td>39</td> <td>45</td> <td>54</td> <td>58</td> <td>36</td> <td>40</td> </tr> <tr> <td>Y</td> <td>30</td> <td>60</td> <td>40</td> <td>50</td> <td>70</td> <td>70</td> <td>30</td> <td>50</td> </tr> </table>	Husband Age	30	32	34	35	37	38	40	42	44	Wife Age	22	25	27	28	29	30	31	32	33	X	46	56	39	45	54	58	36	40	Y	30	60	40	50	70	70	30	50	6
Husband Age	30	32	34	35	37	38	40	42	44																															
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SectionB:-Microeconomics		
18	Which Law states that: "When a consumer consumes more and more units of a product, the utility derived from each additional unit decreases"? (A) Law of Equi-Marginal Utility. (B) Law of Cardinal Utility. (C) Law of Ordinal Utility. (D) Law of Diminishing Marginal Utility	1
19	When $\frac{MU_x}{P_x} > \frac{MU_y}{P_y}$. A) Consumption of Y rises while that of X falls. C)Consumption of X rises while that of Y falls. B) Consumption of both X and Y rises. D) Consumption of both X and Y falls.	1

30	A Consumer buys 20 units of a good at a price of ₹5 per unit.He incurs an expenditure of ₹120 when he buys 24 units.Calculate price elasticity of demand using percentage method.Comment upon the likely shape of demand curve based on this information. OR	4																		
30	From the following information about a firm,find firm's equilibrium output in terms of Marginal Cost and Marginal Revenue.Give reason and also find the profit at this output. <table border="1" data-bbox="159 331 966 611"> <thead> <tr> <th>Output(units)</th> <th>Total Revenue(₹)</th> <th>Total Cost(₹)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7</td> <td>8</td> </tr> <tr> <td>2</td> <td>14</td> <td>15</td> </tr> <tr> <td>3</td> <td>21</td> <td>21</td> </tr> <tr> <td>4</td> <td>28</td> <td>28</td> </tr> <tr> <td>5</td> <td>35</td> <td>36</td> </tr> </tbody> </table>	Output(units)	Total Revenue(₹)	Total Cost(₹)	1	7	8	2	14	15	3	21	21	4	28	28	5	35	36	4
Output(units)	Total Revenue(₹)	Total Cost(₹)																		
1	7	8																		
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3	21	21																		
4	28	28																		
5	35	36																		
31	What will be the impact of the following on the supply curve of rice? a)Increase in price of fertilizer and seeds b) increase in the prices of potato as it can also be grown on the land where rice is grown.	2+2																		
32	A consumer consumes only two goods X and Y whose prices are Rs 2 and Rs 1 per unit respectively. If the consumer chooses a combination of the two goods with marginal utility of X being 4 and that of Y also being 4, Is the consumer in equilibrium? Give reasons. Explain what will a rational consumer do in this situation? Use Marginal Utility Analysis.	4																		
33	Availability of agricultural land is limited in India but demand of food grains is continuously increasing. Is it possible to increase the supply of food grains by continuously increasing one variable input like seeds? Which law becomes applicable here? Explain it with the help of diagram OR Explain with the help of diagrams,the effect of following on the demand for a good: A)A rise in price of Subsitute goods B)Fall in price of own good	6																		
34	A) Higher the IC,Higher the Satisfaction.Explain this statement by giving suitable reason and draw diagram B)What are the effects of Price Floor on the market of good? Use diagram.	3 3																		



OSDAV Public School, Kaithal
December Examination,2024
Class : XI
Subject : Economics.

Time:- 3 hrs

General instruction:-

Set:- B

1.)All Questions are compulsory.

MM:-80

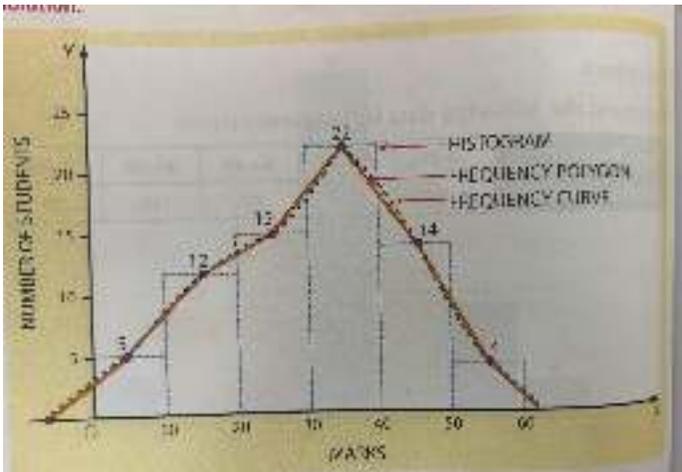
2.)Q. No 1-10 & Q. No 18-27 carry 1 mark, Q. No 11-12 & Q. No 28-29 carry 3 marks, Q. No 13-15 & 30-32 carry 4 marks, Q. No 16-17 & 33-34 carry 6 marks.

Q.No.	SectionA-Statistics for Economics	
1	From the following statement given in column I&column II, Choose the correct pair of statement: Column I. A. Economic forecasting. B. Economic Activities. C. Homogeneous data D. Human Wants. a) 3 4 2 1 b) 4 2 3 1 c) 3 1 4 2 d) 2 1 3 4 Column II 1. Unlimited 2. Sampling method 3. Importance of Statistics 4. Activities undertaken to earn a living	1
2	Statistical data should be _____ and _____. (Fill in the blanks from the correct option): (a) Uniform, homogeneous. (b) Different, homogeneous (c) Uniform, heterogeneous. (d) Different, heterogeneous	1
3	Read the following statements carefully and choose the correct alternative from the following:- Statement 1-In case of symmetrical distribution the values of mean median and mode are equal. Statement 2:- The frequency curve is not bell shaped in case of symmetrical distribution. (A) Both the statements are true. (B) Both the statements are false. (C) Statement 1 is true and statement 2 is false. (D) Statement 1 is false and statement 2 is true.	1
4	Ram has collected data on strength of school from 2019 -2023. Which mode of presentation should he use for comparison and computation of data in the most accurate way. a) Textual presentation. b) Diagrammatic presentation. c) Tabular presentation. d)None of above	1
5	Read the following statements carefully and choose the correct alternative:- 1 The sum of deviation of items from median is zero. 2 Arithmetic mean is a positional average 3 Median is affected by the extreme observations. 4 An average is not enough to compare series. (A) 1 and 2 are correct. (B) Only 4 is correct. (C) 2 and 3 are correct. (D) 1,2 and 3 are correct	1
6	In a negatively skewed distribution:- (A) Mean=Median=Mode. (B) Mean>Median>Mode (C) Mean<Median<Mode. (D) None of these	1
7	The average weight of students In a class of 40 students is 50 kg. If the weight of the teacher be included, the average rises by $\frac{1}{2}$ kg, the weight of the teacher is:- (A) 50.5 kg. (B) 70.5 kg. (C) 41 kg. (D) 70 kg	1
8	The Correlation between sale of woollen garments and day temperature is:- A)Zero. B)Negative. C)Positive. D)None of above	1

17	Calculate the Karl Pearson's Coefficient of correlation.								6	
	X	12	15	18	21	24	27	30		
	Y	6	8	10	12	14	16	18		
OR										
	Find out the Coefficient of rank correlation between X and Y									
	X	46	56	39	45	54	58	36	40	6
	Y	30	60	40	50	70	70	30	50	

SectionB:-Microeconomics		
18	Coefficient of Inelastic supply is (A) infinity. (B) greater than one. (C) zero. (D) less than one.	1
19	Match the statements in Coloumn A and B COLUMN A (i) Buffer Stock. (ii)Price floor (iii)Rationing (iv)Price ceiling and support price Choose the correct alternative. (A)(i)d (ii)c (iii)a (iv)b. (C)(i)b (ii)c (iii)a (iv)d. COLUMN B a) price fixed below equilibrium b) Direct intervention by government c) Price fixed above equilibrium d) a consequence of price supportprogram (B)(i)a(ii)c (iii)d (iv)b (D)(i)d (ii)a (iii)c (iv)b.	1
20	Concavity of PPC implies A)Increasing MRT. B)Decreasing MRT. C)Constant MRT. D)None of above.	1
21	Which one of the following is not an essential element of supply? a) Price of the commodity. b) Period of time c) Willingness to buy. d) Quantity of the commodity	1
22	_____ represents all those different combinations of two commodities that a consumer can buy, given his income and prices of the two commodities	1
23	Which Law states that: "When a consumer consumes more and more units of a product, the utility derived from each additional unit decreases"? (A) Law of Equi-Marginal Utility. (B) Law of Cardinal Utility. (C) Law of Ordinal Utility. (D) Law of Diminishing Marginal Utility	1
24	If due to rise in price of a good Y,demand for good X rises, the two goods are A)Substitute. B)Complementary. C)Not related. D)Competitive	1

OSDAV PUBLIC SCHOOL,KAITHAL
Marking Scheme and Answer key of Economics
December Examination
Class:-11
Set-A

S. N		
1	A	1
2	B	1
3	A	1
4	C	1
5	A	1
6	C	1
7	D	1
8	B	1
9	C	1
10	D	1
11		3
12	<p>Technique used would be Deliberate sampling.</p> <p>In this method sample is selected from the population based on the purpose of the investigation.</p> <p>Sample is selected deliberately by the investigator which in his opinion is considered as best to represent the population.</p> <p>All units of population do not have equal chance to get selected</p> <p>It is simple technique of sampling</p>	3

13

3+1

Table No.

No. of persons going in educational trip
(Wagah border) of D.A.V.P.S.
(students, teachers and peons) (Fig. in nos.)

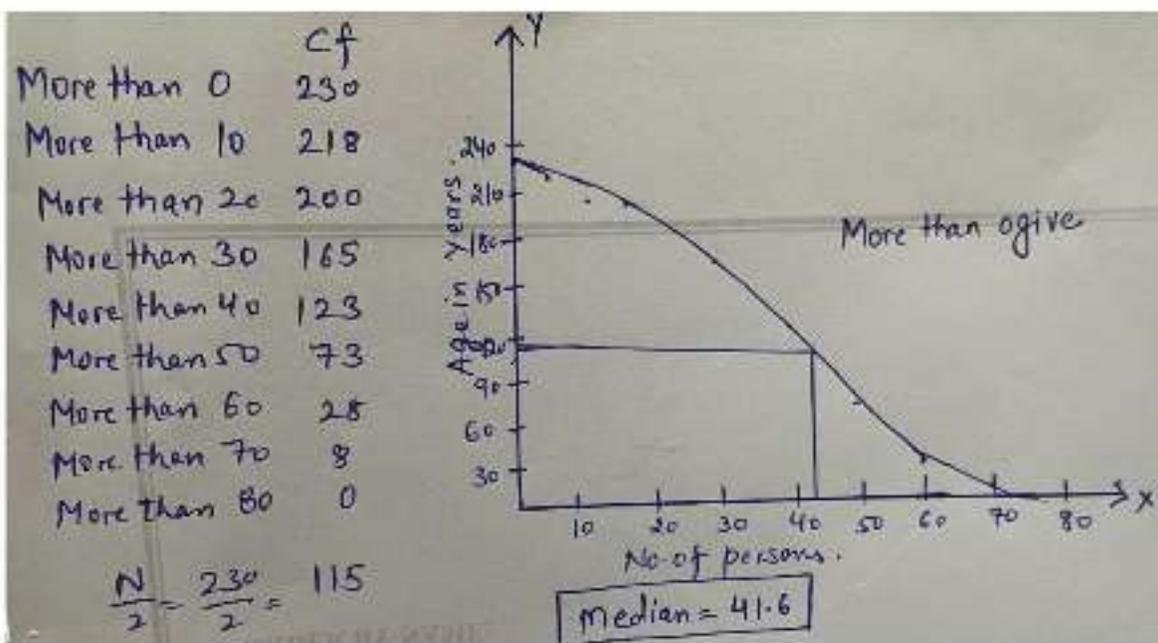
Trip goers	Sex		Total
	male	female	
Students	90	30	120
Teachers	26	2	28
Peons	12	-	12
Total	128	32	160

Footnote :

Source :

14

3+1



Median -41.6

15

5-10	I (f)	II (f+1)	III (f+5)	IV (f+10)	V (f+15)	VI (f+15)
5-10	20	21	25	30	35	40
10-15	24	25	29	34	39	44
15-20	32	33	37	42	47	52
20-25	28	29	33	38	43	48
25-30	20	21	25	30	35	40
25-30	26	27	31	36	41	46

	5-10	10-15	15-20	20-25	25-30
I			✓		
II		✓	✓		
III	✓	✓	✓		
IV		✓	✓	✓	
V			✓	✓	✓
VI					
Total	1	3	6	3	0

3+1

Age	Frequency
0-5	20
5-10	24
10-15	32
15-20	28
20-25	20
25-30	6

$$Z = l_1 + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times i$$

$$= 10 + \frac{32 - 24}{2(32) - 24 - 28} \times 5$$

$$= 10 + \frac{8}{12} \times 5$$

$$= 10 + (3.33)$$

$$= 13.33$$

16

X	(X+2)	(X-2)	(X+2)	(X+2)
5	7	3	10	2.50
10	12	8	20	5.00
16	17	13	30	7.50
20	22	18	40	10.00
25	27	23	50	12.50
30	32	28	60	15.00
35	37	33	70	17.50
$\Sigma X = 140$	$\Sigma X = 154$	$\Sigma X = 128$	$\Sigma X = 280$	$\Sigma X = 70$
$\bar{X} = \frac{\Sigma X}{N} = \frac{140}{7} = 20$	$\bar{X} = \frac{\Sigma X}{N} = \frac{154}{7} = 22$	$\bar{X} = \frac{\Sigma X}{N} = \frac{128}{7} = 18.28$	$\bar{X} = \frac{\Sigma X}{N} = \frac{280}{7} = 40$	$\bar{X} = \frac{\Sigma X}{N} = \frac{70}{7} = 10$

When each item of the series is increased by 2, then mean also increased by 2.

When each item of the series is decreased by 2, then mean also decreased by 2.

When each item of the series is multiplied by 2, then mean also gets multiplied by 2.

When each item of the series is divided by 2, then mean also get divided by 2.

3+3

$$\bar{X}_{12} = \frac{\bar{X}_1 N_1 + \bar{X}_2 N_2}{N_1 + N_2}$$

$$\bar{X}_1 = 73 \quad \bar{X}_2 = 86$$

$$N_1 = 26 \quad N_2 = 24$$

$$\bar{X}_{12} = \frac{(73 \times 26) + (86 \times 24)}{26 + 24}$$

$$= \frac{1898 + 2064}{50} = \frac{3962}{50} = 79.24$$

B)

17

44 33

Calculation of Coefficient of Correlation

X	Husband's Age (X-Series)		Wife's Age (Y-Series)			dxdy
	dx = X - A A = 37	dx ²	Y	dy = Y - A A = 28	dy ²	
30	-7	49	22	-6	36	42
32	-5	25	25	-3	9	15
34	-3	9	27	-1	1	3
35	-2	4	28 (A)	0	0	0
37 (A)	0	0	29	+1	1	0
38	+1	1	30	+2	4	2
39	+3	9	31	+3	9	9
40	+5	25	32	+4	16	20
42	+7	49	33	+5	25	35
44						
	Σdx = -1	Σdx² = 171		Σdy = 5	Σdy² = 101	Σdxdy =

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

Here, $\sum dxdy = 126$; $\sum dx = -1$; $\sum dy = 5$; $N = 9$; $\sum dx^2 = 171$; $\sum dy^2 = 101$

$$= \frac{9 \times 126 - (-1)(5)}{\sqrt{9 \times 171 - (-1)^2} \times \sqrt{9 \times 101 - (5)^2}}$$

$$= \frac{1134 + 5}{\sqrt{1538} \times \sqrt{884}} = \frac{1139}{1166.015} = 0.976$$

0.976. It shows high degree of positive correlation between the

2+4

Or

X	Rank R ₁	Y	Rank R ₂	D = R ₁ - R ₂	D ²
46	5	30	1.5	3.5	12.25
56	7	60	6	1	1
39	2	40	5	-1	1
45	4	50	4.5	-0.5	0.25
54	6	70	7.5	-1.5	2.25
58	8	70	7.5	0.5	0.25
36	1	30	1.5	-0.5	0.25
40	3	50	4.5	-1.5	2.25
N = 8					ΣD ² = 19.5

Here numbers 30, 50 and 70 are repeated twice in series Y. Therefore, m = 2 in Y.

$$r_k = 1 - \frac{6 \left[\sum D^2 + \frac{1}{12} (m_1^3 - m_1) + \frac{1}{12} (m_2^3 - m_2) + \frac{1}{12} (m_3^3 - m_3) \right]}{N^3 - N}$$

$$= 1 - \frac{6 \left[19.5 + \frac{1}{12} (2^3 - 2) + \frac{1}{12} (2^3 - 2) + \frac{1}{12} (2^3 - 2) \right]}{8^3 - 8}$$

2+4

$$\begin{aligned}
&= 1 - \frac{6 \left[19.5 + \frac{1}{12}(6) + \frac{1}{12}(6) + \frac{1}{12}(6) \right]}{512 - 8} \\
&= 1 - \frac{6[19.5 + 0.5 + 0.5 + 0.5]}{504} \\
&= 1 - \frac{6[21]}{504} = 1 - \frac{126}{504} \\
&= 1 - 0.25 = 0.75
\end{aligned}$$

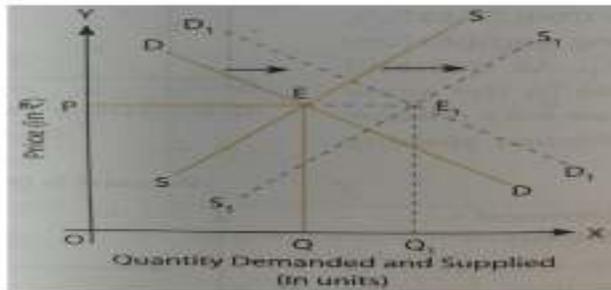
Coefficient of Rank Correlation (r_k) = 0.75.

18	D	1
19	C	1
20	D	1
21	A	1
22	B	1
23	C	1
24	C	1
25	A	1
26	D	1
27	B	1
28	<p>Production below the potential means that total production in the economy is somewhere below the production possibility curve .</p> <p>When government starts employment generation schemes, as the economy is operating inside the PPC, the economy moves forward towards the PPC.</p>	3

29

(i) The supply of cotton shirt will increase as price of input i.e. cotton, falls sharply due to bumper produce.

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



3

Or

Implication of Homogeneous Product' is that buyers treat the products as identical. Therefore, the buyers are willing to pay only the same price for the products of all the firms in the industry. It also implies that no individual firm is in a position to charge a higher price for its product. This ensures uniform price in the market.

30

Test 8: Linear
 MCQs (10) | Questions (10) | MCQs (10) | 10
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 www.civildatas.com

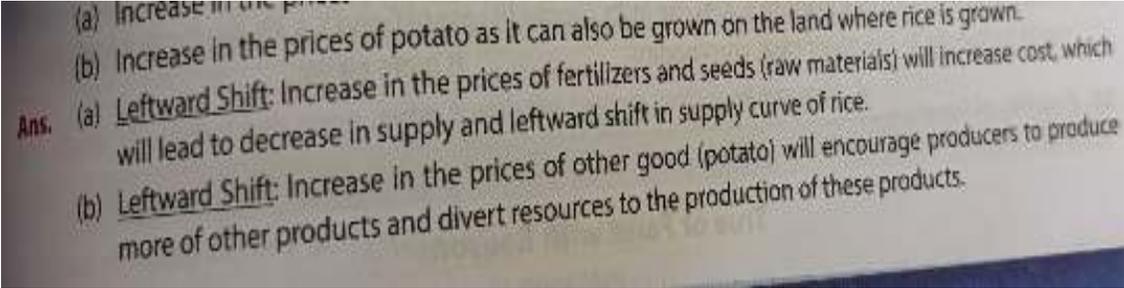
Output (Units)	Total Revenue (₹)	Marginal Revenue (₹)	Total Cost (₹)	Marginal Cost (₹)
1	7	7	8	8
2	14	7	15	7
3	21	7	21	6
4	28	7	28	7
5	35	7	36	8

In the above table, $MR = MC$ in two situations: (i) when 2 units of output are produced, and (ii) when 4 units of output are produced. However, in situation 1, when output is 2 units, MC is falling, whereas in situation 2, when output is 4 units, MC is rising. A producer strikes equilibrium when two conditions are satisfied:

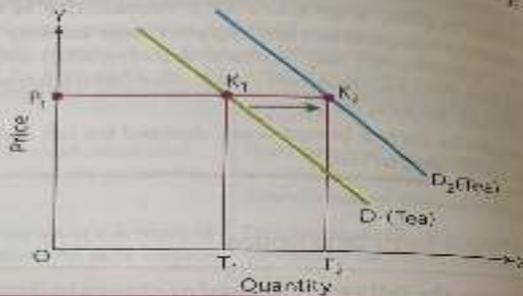
(i) $MR = MC$, and (ii) MC is rising.
 This means that the equilibrium will be struck when 4 units of output are produced and not when 2 units of output are produced.

When 4 units of output are produced, $TR = ₹ 28$ and $TC = ₹ 28$
 $Profit = TR - TC$
 $Profit = ₹ 28 - ₹ 28$
 $= 0$

4

31	 <p>(a) Increase in the prices of potato as it can also be grown on the land where rice is grown. (b) Increase in the prices of potato as it can also be grown on the land where rice is grown. Ans. (a) <u>Leftward Shift</u>: Increase in the prices of fertilizers and seeds (raw materials) will increase cost, which will lead to decrease in supply and leftward shift in supply curve of rice. (b) <u>Leftward Shift</u>: Increase in the prices of other good (potato) will encourage producers to produce more of other products and divert resources to the production of these products.</p>	2+2
32	<p>Given $P_x=2$, $P_y=1$ and $MU_x=4, MU_y=4$</p> <p>A consumer will be in equilibrium when $MU_x/P_x=MU_y/P_y$.</p> <p>$4/2 < 4/1$, $2 < 4$</p> <p>This would induce the consumer to buy more of Y in place of X till $MU_x/P_x=MU_y/P_y$. With Explanation</p>	4
33	<p>It will not be possible to increase the supply of food grains continuously only by increasing seeds because of the law of variable proportions As we increase the use of seeds without changing other inputs, the production will increase but beyond the level, it will start falling</p> <p>Phase 1: Initially variable input is too small as compared to the fixed input. As production starts, there is efficient use of the fixed input, leading to rise in productivity of the variable input on account of division of labour. As a result, TP rises at increasing rate.</p> <p>Phase II: After a level of output, pressure on fixed input leads to fall in productivity of the variable input. As a result, TP continues to rise but at a decreasing rate.</p> <p>Phase III: The amount of variable input becomes too large in comparison to the fixed input causing decline in TP.</p> <p>Or</p>	6

FIGURE



Demand curve for tea shifts to the right when price of the substitute commodity (coffee) increases. Thus, for consumer shifts from K_1 to K_2 buying more of tea even when its price is constant.

(i) Increase in Price of Substitute Good: Initially, if price of tea is OP_1 , quantity purchased is OT_1 . Now, suppose the price of tea remains constant but the price of coffee increases. **How would you react as a consumer?**

As a rational consumer, you may decide to substitute some tea in place of coffee. Or, you are expected to buy more of tea when its price is constant (Fig. 11).

Initially you were buying P_1K_1 quantity of tea (which is equal to OT_1). Now you are willing to buy P_1K_2 (= OT_2). Greater purchase of a commodity at its constant price points to a situation of increase in demand, or forward shift in demand curve. Accordingly, demand curve for tea shifts to the right from D_1 to D_2 .

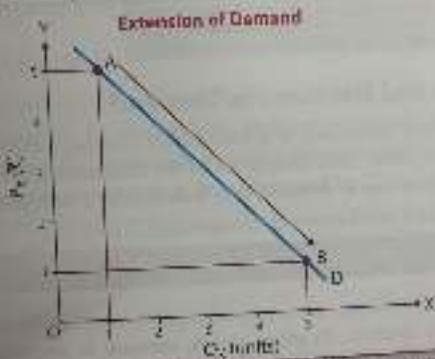
3

Table 4. Extension of Demand

P_x (₹)	Q_x (Unit)	Description
5	1	Fall in Own Price of the Commodity
1	5	Rise in Quantity Demanded

When the price of Good X is ₹ 5 per unit, 1 unit is demanded. When price reduces to ₹ 1 per unit, demand extends to 5 units.

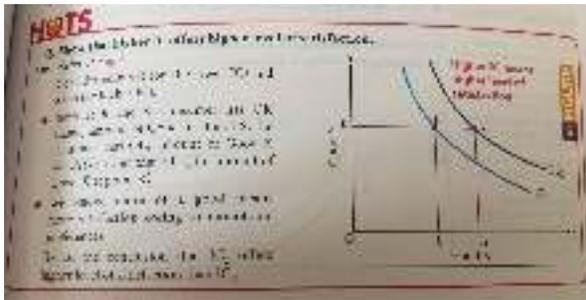
Extension of demand is indicated by a **downward movement** along the demand curve, as from point A to B in Fig. 7.



FIGURE

Downward movement along the demand curve indicates extension of demand. It is shown by the movement from point A to point B in Fig. 7.

3



What are the effects of a price floor?

When government imposes lower limit on a price that may be charged for a particular good or service, it is called Minimum Price Ceiling, e.g. price OP_1 . At this price, the producers are willing to supply P_1B or (OQ_2), while consumers demand only P_1A ($= OQ_1$). Unable to sell, all they want to sell, the producers may try to illegally sell below the minimum price.

OSDAV PUBLIC SCHOOL,KAITHAL
Marking Scheme and Answer key of Economics
December Examination
Class:-11
Set-B

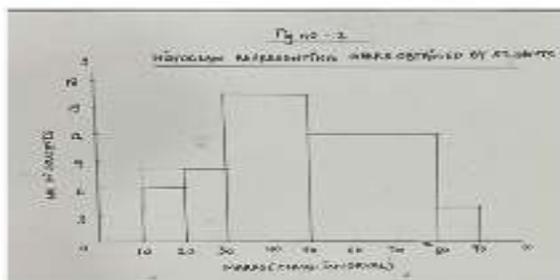
S. N		
1	A	1
2	A	1
3	C	1
4	C	1
5	B	1
6	C	1
7	B	1
8	B	1
9	A	1
10	C	1
11	Census method would be more appropriate in the given situation because the district consists of diverse ethnic groups i.e. population is heterogeneous. With due Explanation	3

12

3

- i) Component bar diagrams are useful for
- Comparing the sizes of different elements which a variable is made up of.
 - Studying the relationship among the integral parts of the variable.
- ii)

Marks	No. of Students	Adjusted Frequency
10-20	6	
20-30	8	
30-50	32	16*
50-80	36	12*
80-90	4	



1+2

13

)

Table no- 1
Classification of students & teachers going for educational exchange trip basis gender

(fig. in nos.)

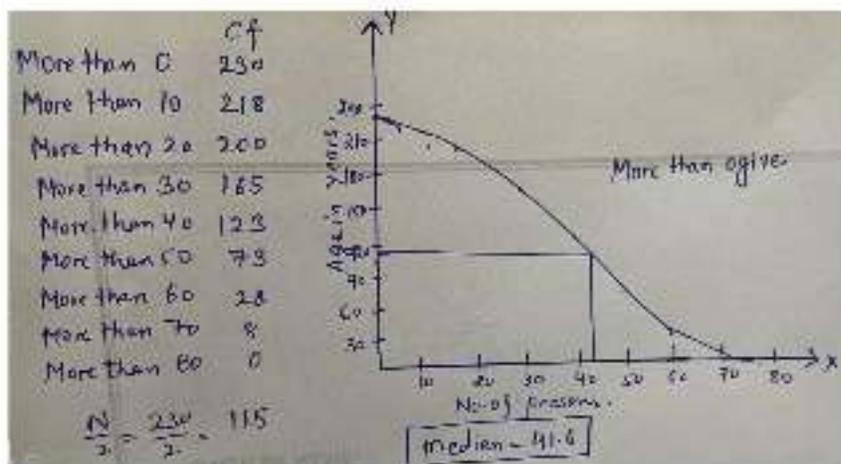
		2023			2024	
Person/gender	Male	female	Total	Male	Female	Total
Students	20	40	60	60	20	80
Teachers	2	3	5	3	3	6
Total	22	43	65	63	23	86

Footnote: Students & teachers of St. Stephen's College

Source: College records

3+1

14



Median -41.6

4

15

Grouping results

Score (X)	Frequency (f)	in Table					
		Column I	Column II	Column III	Column IV	Column V	Column VI
8	5						
9	6		11		19		
10	5		16		24		21
11	7		23		31		38
12	9		32		40		49
13	8		40		48		57
14	6		46		54		63
15	5		51		59		68

Analysis Table

Column No.	8	9	10	11	12	13	14	15
I					✓			
II					✓			
III						✓		
IV				✓	✓			
V				✓	✓	✓		
VI			✓	✓	✓	✓	✓	
Total			1	2	6	4	8	

The size 12 is occurring maximum number of times (5 times). \therefore Mo = 12
 Ans. Mode = 12

3+1

16

2. The sum of the squares of the deviations of the items from their Arithmetic Mean is minimum, i.e., $\sum(X - \bar{X})^2$ is minimum. The sum is less than the sum of the squares of the deviations of the items from any other value.

It is made clear with the following illustration:

X	$(X - \bar{X})$ $\bar{X} = 7$	$(X - \bar{X})^2$ x^2	$x' = X - 4$ $X - 4$	$(X - 4)^2$ x'^2
3	-4	16	-5	25
5	-2	4	-3	9
8	+1	1	0	0
12	+5	25	+4	16
		$\sum(X - \bar{X})^2$ or $\sum x^2 = 46$		$\sum(X - 4)^2$ or $\sum x'^2 = 50$

A)

$\sum(X - \bar{X})^2$ or $\sum x^2$ represents total of square of Deviations from Arithmetic Mean, while $\sum(X - A)^2$ or $\sum x'^2$ represents total of square of Deviations from Assumed Mean.

b)

3+3

$$\begin{aligned} \text{Corrected Mean} &= \{\sum X - IC + C\} / N \\ &= \{(58 \times 50) + 40 + 42 - 25\} / 52 - 1 \\ &= \{2900 + 57\} / 51 \\ &= 57.98 \end{aligned}$$

17

6

X-Series			Y-Series (Actual Mean Method)			
X	$x = X - \bar{X}$	x^2	Y	$y = Y - \bar{Y}$	y^2	xy
12	-9	81	6	-6	36	54
15	-6	36	8	-4	16	24
18	-3	9	10	-2	4	6
21	0	0	12	0	0	0
24	+3	9	14	+2	4	6
27	+6	36	16	+4	16	24
30	+9	81	18	+6	36	54
$\Sigma X = 147$		$\Sigma x^2 = 252$	$\Sigma Y = 84$		$\Sigma y^2 = 112$	$\Sigma xy = 168$

$$\bar{X} = \frac{\Sigma X}{N} = \frac{147}{7} = 21$$

$$\bar{Y} = \frac{\Sigma Y}{N} = \frac{84}{7} = 12$$

$$\text{Coefficient of Correlation (r)} = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \times \Sigma y^2}}$$

$$\Sigma xy = 168; \Sigma x^2 = 252; \Sigma y^2 = 112$$

$$= \frac{168}{\sqrt{252 \times 112}} = \frac{168}{\sqrt{28,224}} = \frac{168}{168} = 1$$

Ans. Coefficient of Correlation = 1. There is perfect positive correlation between the values of Series X and Y. The values of both the series are to be

Or

X	Rank R_x	Y	Rank R_y	$D = R_x - R_y$	D^2
46	5	30	1.5	3.5	12.25
56	7	60	6	1	1
39	2	40	3	-1	1
45	4	50	4.5	-0.5	0.25
54	6	70	7.5	-1.5	2.25
58	8	70	7.5	0.5	0.25
36	1	50	4.5	-3.5	12.25
40	3	50	4.5	-1.5	2.25
$N = 8$					$\Sigma D^2 = 19.5$

Here numbers 30, 50 and 70 are repeated twice in series Y.
Therefore, $m = 2$ in Y.

$$r_k = 1 - \frac{6 \left[\Sigma D^2 + \frac{1}{12}(m_1^2 - m_1) + \frac{1}{12}(m_2^2 - m_2) + \frac{1}{12}(m_3^2 - m_3) \right]}{N^2 - N}$$

$$= 1 - \frac{6 \left[19.5 + \frac{1}{12}(2^2 - 2) + \frac{1}{12}(2^2 - 2) + \frac{1}{12}(2^2 - 2) \right]}{8^2 - 8}$$

$$= 1 - \frac{6 \left[19.5 + \frac{1}{12}(6) + \frac{1}{12}(6) + \frac{1}{12}(6) \right]}{512 - 8}$$

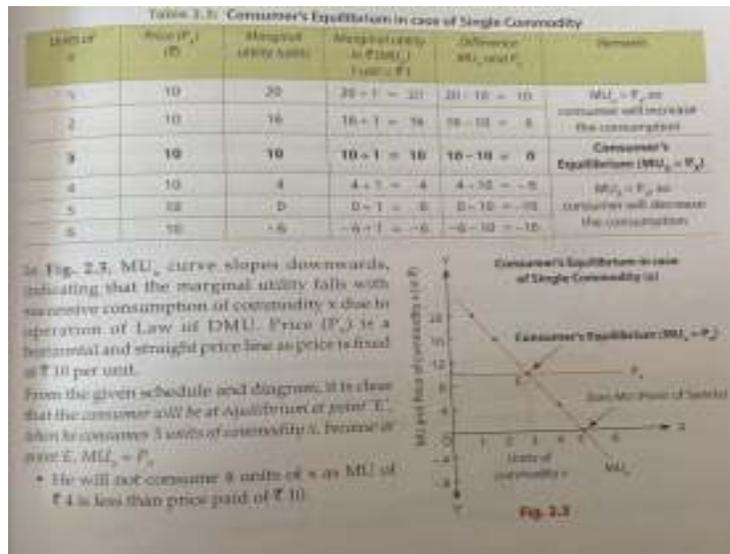
$$= 1 - \frac{6[19.5 + 0.5 + 0.5 + 0.5]}{504}$$

$$= 1 - \frac{6[21]}{504} = 1 - \frac{126}{504}$$

$$= 1 - 0.25 = 0.75$$

Coefficient of Rank Correlation (r_k) = 0.75.

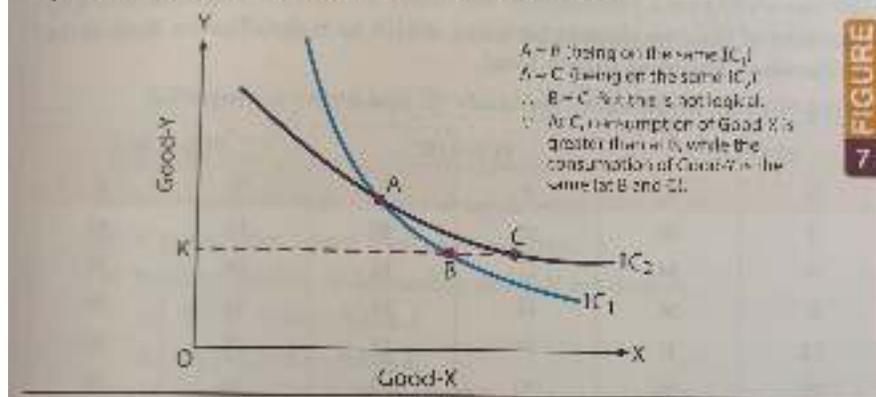
18	D	1
19	A	1
20	A	1
21	C	1
22	Budget line	1
23	D	1
24	A	1
25	D	1
26	A	1
27	B	1
28	it represents the situation of under employment of resources the scheme leads towards full and efficient utilisation of resources production in the economy moves towards PPC.	3



Or

(iv) ICs do not Cross or Intersect Each Other

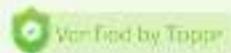
What, if they do? Well, we do not get logical results, i.e., the result will be a paradox or a contradiction. Fig. 7 illustrates how.



- Consider points A and B. These are on the same IC₁. Therefore, these are equal in terms of the level of satisfaction. So that A = B. Likewise A = C, as these are on the same IC₂.
- Since A = B and A = C, we can conclude that B = C. But this is not logical. Because: at both B and C, the consumption of Good-Y is the

30

Solution



4

Price (Rs.)	Total Expenditure (Rs.)	Quantity Dema
4	200	$\frac{200}{4} =$
3	300	$\frac{300}{3} =$

Change in Price	Percentage Change in Price	Cha
Rs. 4 to Rs. 3	$\frac{3 - 4}{4} \times 100 = -24\%$	50 un

Price elasticity of demand

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

$$= (-) \frac{100\%}{-25\%} = 4.$$

Price elasticity of demand = 4.

31

(D) A Firm Under Perfect Competition is a Price Taker, not a Price Maker

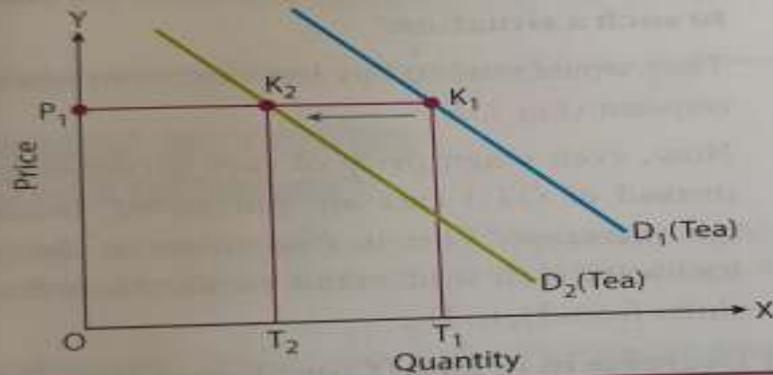
Under perfect competition, there are large number of firms producing homogenous commodity. An individual firm in such a market cannot affect price of the commodity. Price is fixed by the forces of market demand and market supply. It is at this price all the firms in the industry sell their output. On its own, no firm can affect the prevailing market price. This is explained in terms of the following reasons:

- Number of Firms:** The number of firms under perfect competition is so large that no individual firm, by changing its output, can cause any **meaningful change** in the total market supply. Accordingly, market price cannot be affected on the basis of market supply.
- Homogeneous Product:** All firms in a perfectly competitive industry produce homogenous product. In such a situation, if any firm fixes its price higher than the existing market price, buyers would shift from this firm to other firms in the market. The policy of higher price (higher than the existing market price) will surely fail.
- Unnecessary Loss due to Lower Price Fixation:** Firms' demand curve under perfect competition is perfectly elastic. It means that a firm can sell whatever amount it wishes to sell at the existing price. In such a situation, the policy of attracting buyers by lowering the price would result in unnecessary loss.

A)

2+2

b) **Decrease in Price of Substitute Good:** If price of coffee decreases, you will tend to substitute some coffee in place of tea. Or, you will demand less tea even when its price is constant. Fig. 12 illustrates this situation.



b)

32

The vertical distance between AC and AVC curves continues to fall with increase in output because the gap between them is AFC, which declines with rise in output.

*Total fixed cost curve

*Total fixed cost refers to those cost which do not vary directly with the level of output.

Or

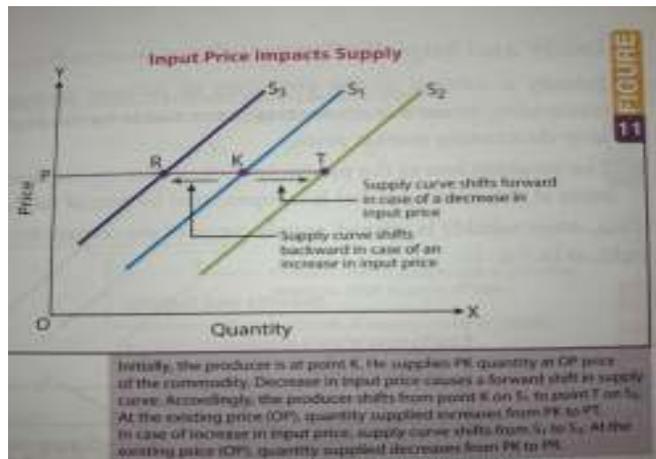
Cash incentives by the government for using organic methods for discouraging use of chemical fertilizers will decrease demand for chemical fertilizers.

Demand curve will shift towards left. At the original equilibrium price there will be excess supply leading to competition among sellers i.e. decrease in price.

This will lead to contraction in supply and expansion in demand till the new equilibrium is attained at a lower price and quantity.

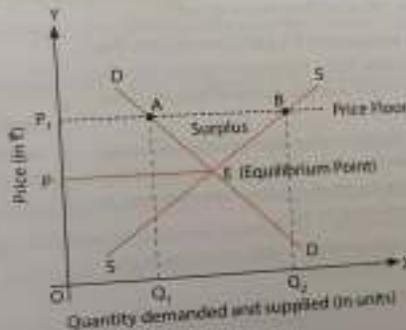
2+2

33



3+3

What are the effects of a price floor? When government imposes lower limit on a price that may be charged for a particular good or service, it is called Minimum Price Ceiling, e.g. price OP_1 . At this price, the producers are willing to supply P_1B or (OQ_2), while consumers demand only P_1A (= OQ_1). Unable to sell, all they want to sell, the producers may try to illegally sell below the minimum price.



B)

34

It will not be possible to increase the supply of food grains continuously only by increasing seeds because of the law of variable proportions. As we increase the use of seeds without changing other inputs, the production will increase but beyond the level, it will start falling.

Phase 1: Initially variable input is too small as compared to the fixed input. As production starts, there is efficient use of the fixed input, leading to rise in productivity of the variable input on account of division of labour. As a result, TP rises at increasing rate.

Phase II: After a level of output, pressure on fixed input leads to fall in productivity of the variable input. As a result, TP continues to rise but at a decreasing rate.

Phase III: The amount of variable input becomes too large in comparison to the fixed input causing decline in TP.

Or

3+3

