

Economics

Time allowed: 3 hours

Maximum Marks: 80

General Instructions:

- This question paper contains two parts:
Part A - Statistics (40 marks)
Part B - Micro Economics (40 marks)
- Marks for questions are indicated against each question.
- Question No. 1-7 and Question No. 16 – 22 are 1 mark questions and are to be answered in one word/sentence.
- Question No. 8-10 and Question No. 23 – 25 are 3 marks questions and are to be answered in 60 - 80 words each.
- Question No. 11-13 and Question No. 26 – 28 are 4 marks questions and are to be answered in 80-100 words each.
- Question No. 14-15 and Question No. 29 – 30 are 6 marks questions and are to be answered in 100-150 words each.
- Answers should be brief and to the point and the above word limit be adhered to as far as possible.

Solution

Q	PART - A (STATISTICS)	Marks
1	800 OR Relative measures	1
2	Scarcity	1
3	One dimensional	1
4	Inflation	1
5	$\frac{\sum p_1 q_0}{\sum p_0 q_0} \times 100$	1

6	False, Value of Coefficient of correlation lies between -1 and + 1	1																								
7	Mailed questionnaire	1																								
8	<table><tr><th>Geographical classification</th><th>Chronological classification</th></tr><tr><td>When data is classified with reference to geographical locations such as countries, states, cities, districts, etc.it is known as Geographical classification. It is also known as 'Spatial Classification'.</td><td>When data is grouped according to time, such a classification is known as a Chronological Classification.</td></tr><tr><td>In such classification, data are classified either in alphabetical order for reference, or order of size of the value, for immediate comparison.</td><td>In such classification, data are classified either in ascending or in descending order with reference to time such as years, quarters, months, weeks, etc.</td></tr></table>	Geographical classification	Chronological classification	When data is classified with reference to geographical locations such as countries, states, cities, districts, etc.it is known as Geographical classification. It is also known as 'Spatial Classification'.	When data is grouped according to time, such a classification is known as a Chronological Classification.	In such classification, data are classified either in alphabetical order for reference, or order of size of the value, for immediate comparison.	In such classification, data are classified either in ascending or in descending order with reference to time such as years, quarters, months, weeks, etc.	3																		
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9	<p>Median: "The median is that value of the variable which divides the group into two equal parts, one part comprising all values greater and the other values less than the median."</p> <p>Properties of median:</p> <p>(i) The sum of deviations of items from median, ignoring the signs, is minimum.</p> <p>(ii) Median is a positional average and hence it is not influenced by the extreme values.</p> <p>OR</p> <table><tr><th>Marks (X)</th><th>Number of Students (f)</th><th>Mid-points (m)</th><th>fm</th></tr><tr><td>0-4</td><td>8</td><td>2</td><td>16</td></tr><tr><td>4-8</td><td>16</td><td>6</td><td>96</td></tr><tr><td>8-12</td><td>4</td><td>10</td><td>40</td></tr><tr><td>12-16</td><td>2</td><td>14</td><td>28</td></tr><tr><td></td><td>$\sum f = N = 30$</td><td></td><td>$\sum fm = 180$</td></tr></table> $\text{Mid - points of the classes} = \frac{l_1 + l_2}{2}$ $\bar{X} = \frac{\sum fm}{\sum f} = \frac{180}{30} = 6$	Marks (X)	Number of Students (f)	Mid-points (m)	fm	0-4	8	2	16	4-8	16	6	96	8-12	4	10	40	12-16	2	14	28		$\sum f = N = 30$		$\sum fm = 180$	3
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10	<p>Less than' cumulative frequency distribution of daily wages</p> <table><tr><th>Daily wages (in ₹)</th><th>No. of workers (f)</th></tr><tr><td>Less than 55</td><td>18</td></tr><tr><td>Less than 60</td><td>30 = (18 + 12)</td></tr><tr><td>Less than 65</td><td>50 = (30 + 20)</td></tr><tr><td>Less than 70</td><td>64 = (50 + 14)</td></tr><tr><td>Less than 75</td><td>80 = (64 + 16)</td></tr></table> <p>More than' cumulative frequency distribution of daily wages</p> <table><tr><th>Daily wages (in ₹)</th><th>No. of workers (f)</th></tr><tr><td>More than 50</td><td>80</td></tr><tr><td>More than 55</td><td>62 = (80 - 18)</td></tr><tr><td>More than 60</td><td>50 = (80 - 30)</td></tr><tr><td>More than 65</td><td>30 = (80 - 50)</td></tr><tr><td>More than 70</td><td>16 = (80 - 64)</td></tr></table>	Daily wages (in ₹)	No. of workers (f)	Less than 55	18	Less than 60	30 = (18 + 12)	Less than 65	50 = (30 + 20)	Less than 70	64 = (50 + 14)	Less than 75	80 = (64 + 16)	Daily wages (in ₹)	No. of workers (f)	More than 50	80	More than 55	62 = (80 - 18)	More than 60	50 = (80 - 30)	More than 65	30 = (80 - 50)	More than 70	16 = (80 - 64)	3
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11	<p>This questions has been solved below after arranging the series in ascending order:</p> <table><tr><th>Age (in years)</th><th>No. of persons</th><th>c.f.</th></tr><tr><td>35 - 40</td><td>28</td><td>28</td></tr><tr><td>40 - 45</td><td>40</td><td>68</td></tr><tr><td>45 - 50</td><td>42</td><td>110</td></tr><tr><td>50 - 55</td><td>26</td><td>136</td></tr><tr><td>55 - 60</td><td>14</td><td>150</td></tr></table> <p>$M_e = \text{Size of } \left(\frac{N}{2}\right)^{th} = \left(\frac{150}{2}\right)^{th} = 75^{th} \text{ item which lies in } 45 - 50 \text{ class interval}$</p>	Age (in years)	No. of persons	c.f.	35 - 40	28	28	40 - 45	40	68	45 - 50	42	110	50 - 55	26	136	55 - 60	14	150	4						
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12	<table border="1"><thead><tr><th>Food Articles</th><th>Price in (₹) pre kg X</th><th>Quantity Consumed (in kg) W</th><th>WX</th></tr></thead><tbody><tr><td>Sugar</td><td>40</td><td>30</td><td>1,200</td></tr><tr><td>Potato</td><td>30</td><td>20</td><td>600</td></tr><tr><td>Onion</td><td>50</td><td>10</td><td>500</td></tr><tr><td>Ghee</td><td>20</td><td>15</td><td>300</td></tr><tr><td>Rice</td><td>70</td><td>50</td><td>3,500</td></tr><tr><td></td><td></td><td>$\sum W = 125$</td><td>$\sum WX = 6,100$</td></tr></tbody></table> $\frac{\sum WX}{\sum W} = \frac{6100}{125} = 48.8$	Food Articles	Price in (₹) pre kg X	Quantity Consumed (in kg) W	WX	Sugar	40	30	1,200	Potato	30	20	600	Onion	50	10	500	Ghee	20	15	300	Rice	70	50	3,500			$\sum W = 125$	$\sum WX = 6,100$	4
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13	<table border="1"><thead><tr><th>X</th><th>f</th><th>fX</th></tr></thead><tbody><tr><td>40</td><td>16</td><td>640</td></tr><tr><td>X₁</td><td>20</td><td>20 X₁</td></tr><tr><td>80</td><td>12</td><td>960</td></tr><tr><td>100</td><td>8</td><td>800</td></tr><tr><td>120</td><td>4</td><td>480</td></tr></tbody></table>	X	f	fX	40	16	640	X ₁	20	20 X ₁	80	12	960	100	8	800	120	4	480	4										
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	<div> <div> $\sum f = 60$ $\sum fx = 2,880 + 20X_1$ </div> <p>Applying formula,</p> $\bar{x} = \frac{\sum fx}{\sum f}$ $68 = \frac{2,880 + 20X_1}{60}$ $4,080 = 2,880 + 20X_1$ $1,200 = 20X_1$ $X_1 = 60$ <p>Missing value is 60.</p> </div>										
14	<table border="1"> <thead> <tr> <th>Section</th><th>Mean</th><th>No. of students</th></tr> </thead> <tbody> <tr> <td>A</td><td>$80 \bar{X}_1$</td><td>$120 N_1$</td></tr> <tr> <td>B</td><td>$? \bar{X}_2$</td><td>$80 N_2$</td></tr> </tbody> </table> <p>Combined mean $(\bar{X}_{1,2}) = 76$</p>	Section	Mean	No. of students	A	$80 \bar{X}_1$	$120 N_1$	B	$? \bar{X}_2$	$80 N_2$	6
Section	Mean	No. of students									
A	$80 \bar{X}_1$	$120 N_1$									
B	$? \bar{X}_2$	$80 N_2$									

$$\bar{X}_{1,2} = \frac{N_1 \bar{X}_1 + N_2 \bar{X}_2}{N_1 + N_2}$$

Where, $\bar{X}_{1,2} = 76$, $N_1 = 120$, $N_2 = 80$ and $\bar{X}_1 = 80$

$$76 = \frac{(120 \times 80) + (80 \times \bar{X}_2)}{120 + 80}$$

$$76 = \frac{9,600 + 80 \bar{X}_2}{200}$$

$$15,200 = 9,600 + 80 \bar{X}_2$$

$$80 \bar{X}_2 = 15,200 - 9,600$$

$$80 \bar{X}_2 = 5,600$$

$$\bar{X}_2 = \frac{5,600}{80} = 70$$

$$\bar{X}_2 = 70 \text{ marks}$$

Hence, mean of the students of section B is 70 marks.

15

Construction of Quantity index numbers

6

Commo- dities	Base Year 2018		Current Year 2019		$p_0 q_0$	$p_0 q_1$	$p_1 q_0$	$p_1 q_1$
	Price	Quantity	Price	Quantity				
	p_0	q_0	p_1	q_1				
A	20	60	24	100	1200	2,000	1,440	2,400
B	16	30	20	50	480	800	600	1,000
C	12	40	12	60	480	720	480	720
D	8	20	12	40	160	320	240	480
					$\sum p_0 q_0$ = 2,320	$\sum p_0 q_1$ = 3,840	$\sum p_1 q_0$ = 2,760	$\sum p_1 q_1$ = 4,600

(a) Laspeyre's quantity index:

	$q_{01} = \frac{\sum q_1 p_0}{\sum q_0 p_0} \times 100$ $= \frac{3,840}{2,320} \times 100$ $= 165.52$ <p>(b) Paasche's quantity index:</p> $q_{01} = \frac{\sum q_1 p_1}{\sum q_0 p_1} \times 100$ $= \frac{4,600}{2,760} \times 100$ $= 166.67$	
	Microeconomics	
16	Individual demand	1
17	AR curve is perfectly elastic and thus parallel to the X-axis.	1
18	Total utility OR Indifference curve	1
19	True	1
20	Collusive oligopoly	1
21	MR curve is steeper than AR curve	1
22	upward, contraction	1
23	<p>Following are the three Central Problems faced by an economy:</p> <ul style="list-style-type: none"> (a) What to produce (b) How to produce (c) For whom to produce <p>(a) What to produce: It is basically the problem of selection of commodities and their quantities to be produced. Every economy has limited resources and they can't produce all the goods and services.</p> <p>(b) How to produce: It is basically the problem of selection of technique of production. It arises when there are two or more way to produce goods and services. For example, a given quantity of Capital Goods can be produced either by using more</p>	3

	<p>machines and less labour or by using more labour and lesser capital (machines).</p> <p>(c) For whom to produce: This problem is concerned with distribution of national product or national income generated in the economy among the various individuals or factors that helped to produce it.</p> <p>OR</p> <p>Economic problem: Economic problem is basically the problem of making choices in the use of scarce resources.</p> <p>Causes of economic problems:</p> <p>(i) Unlimited human wants: Human wants are unlimited and these can never be fully satisfied. As soon as one want is satisfied, another crops up.</p> <p>(ii) Scarcity of resources: Scarcity means shortage of resources in relation to their demand. (<i>It is a relative term</i>). For example, resources like, land, water, minerals and nuclear material etc. are scarce i.e. their availability is less than their demand.</p> <p>(iii) Alternative uses: Resources are not only scarce but can be put to various uses also. For example, a piece of land can be used for agriculture purposes; for setting up a factory or to construct a Godown (warehouse).</p>									
24	<p>Monotonic preferences: Monotonic preferences imply that a consumer always prefers the combination, which has either more of both the goods or more of at least one good and no less of the other good (as compared to another bundle).</p> <p>Why indifference curve is:</p> <p>(i) Downward sloping from left to right: An indifference curve has a negative slope, i.e. it slopes downward from left to right It is because if the consumer decides to have more units of one good (say apples), he will have to reduce the number of units of another good (say oranges), so that the level of satisfaction remains unchanged.</p> <p>(ii) Convex to origin: An indifference curve is convex to origin because of diminishing MRS. MRS diminishes because of the operation of the Law of diminishing marginal utility.</p>	3								
25	<table><tr><td>Original Quantity (Q) = 80 units</td><td>Original Price = ₹20</td></tr><tr><td>New Quantity (Q1) =?</td><td>New Price = 10</td></tr><tr><td>Change in quantity (Δ Q) = Δ Q</td><td>Change in Price (Δ P) = 20 - 10 = 10</td></tr><tr><td colspan="2">Elasticity of Demand (E_d) = 0.2</td></tr></table> <p>Price elasticity of demand (E_d) = $\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$</p>	Original Quantity (Q) = 80 units	Original Price = ₹20	New Quantity (Q1) =?	New Price = 10	Change in quantity (Δ Q) = Δ Q	Change in Price (Δ P) = 20 - 10 = 10	Elasticity of Demand (E _d) = 0.2		3
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$$0.2 = \frac{\Delta Q}{10} \times \frac{20}{80}$$

$$0.2 = \frac{\Delta Q}{40}$$

$$\Delta Q = 0.2 \times 40$$

$$\Delta Q = 8$$

Now, since there is a fall in price, there will be a rise in quantity.

$$\begin{aligned} Q_1 &= Q + \Delta Q \\ &= 80 + 8 \\ &= 88 \end{aligned}$$

26

4

(a) Meaning of movement along the demand curve

Other things remaining the same, when there is a change in the quantity demanded of the commodity due to change in its own price, it is known as change in quantity demanded. It is graphically expressed as movement along the same demand curve.

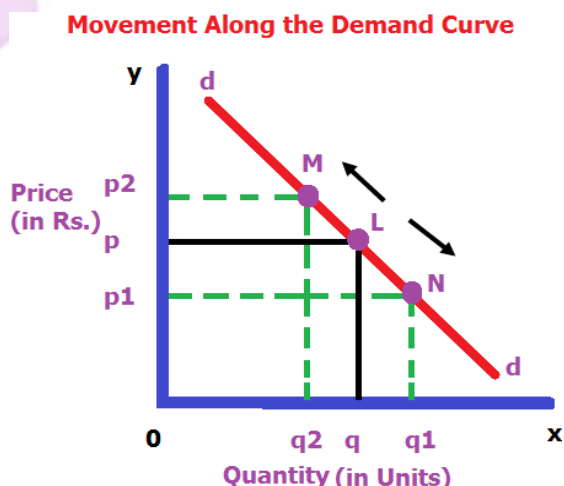
(b) Upward movement of demand curve

When the price of the commodity rises quantity demanded falls. It leads to the upward movement of the demand curve. It is also known as contraction of demand.

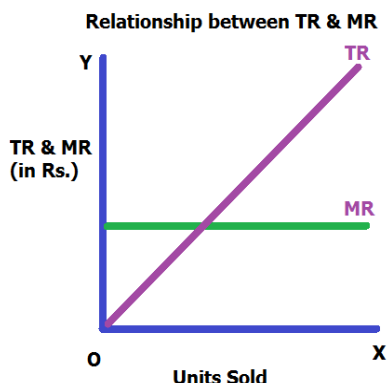
(c) Downward movement of demand curve

When the price of the commodity falls, quantity demanded rises. It leads to the downward movement of the demand curve. It is also known as expansion of demand.

(d) diagram



27	<table><tr><td>Basis</td><td>Explicit cost</td><td>Implicit cost</td></tr><tr><td>(a) Meaning</td><td>Explicit cost or Direct cost is the actual expenditure incurred by a firm to purchase or hire inputs.</td><td>Implicit cost or imputed/estimated cost of inputs owned/factors owned by the firm.</td></tr><tr><td>(b) Payment</td><td>Actual payment is made for this to outsiders/other than owners. It is actual money expenditure on inputs</td><td>No payment is made because the factors belong to the owner/firm.</td></tr><tr><td>(c) Record in accounting books</td><td>It is recorded in accounting books.</td><td>It is not recorded in accounting books.</td></tr><tr><td>(d) Examples</td><td>Wages, Rent, Interest, Payment for power, Insurance premium, Advertising etc.</td><td>Estimated value of self-supplied factors. e.g. Estimated interest on own capital; Estimated rent of own premises/building; Estimated wages of own labour etc.</td></tr><tr><td></td><td></td><td></td></tr></table> <p>OR</p> <table><tr><td>Labour (units)</td><td>Average Product (AP)</td><td>Marginal Product (MP)</td><td>Total Product (TP)</td></tr><tr><td>5</td><td>10</td><td>-</td><td>50</td></tr><tr><td>10</td><td>11</td><td>12</td><td>110</td></tr><tr><td>15</td><td>13</td><td>17</td><td>195</td></tr><tr><td>20</td><td>13</td><td>13</td><td>260</td></tr><tr><td>25</td><td>11.8</td><td>7</td><td>295</td></tr></table>	Basis	Explicit cost	Implicit cost	(a) Meaning	Explicit cost or Direct cost is the actual expenditure incurred by a firm to purchase or hire inputs.	Implicit cost or imputed/estimated cost of inputs owned/factors owned by the firm.	(b) Payment	Actual payment is made for this to outsiders/other than owners. It is actual money expenditure on inputs	No payment is made because the factors belong to the owner/firm.	(c) Record in accounting books	It is recorded in accounting books.	It is not recorded in accounting books.	(d) Examples	Wages, Rent, Interest, Payment for power, Insurance premium, Advertising etc.	Estimated value of self-supplied factors. e.g. Estimated interest on own capital; Estimated rent of own premises/building; Estimated wages of own labour etc.				Labour (units)	Average Product (AP)	Marginal Product (MP)	Total Product (TP)	5	10	-	50	10	11	12	110	15	13	17	195	20	13	13	260	25	11.8	7	295	4
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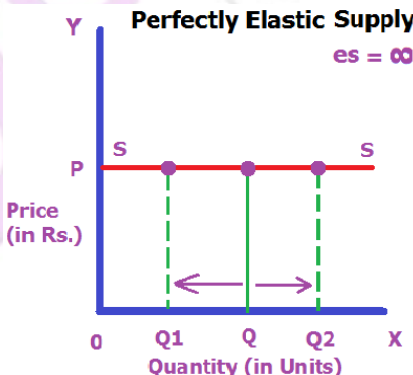
Relationship between Total revenue and marginal revenue under perfect competition:

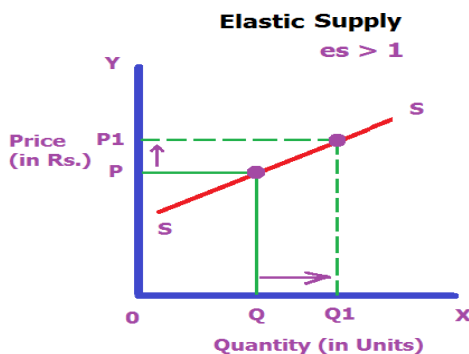
- (a) Under perfect competition, industry is the price maker and firms are price taker. Individual firms do not have control over the price and they cannot reduce the price to sell more.
- (b) So, MR curve is horizontal i.e. parallel to the X-axis.
- (c) TR curve passes through origin. It shows that at zero level, $TR = 0$
- (d) TR curve is a positive straight line which shows that it increases proportionately i.e. it increases at a constant rate with increase in output because MR remains the same throughout.
- (e) $TR = \sum MR$

29

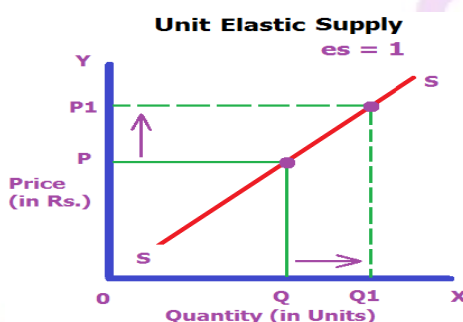
(a) Excess demand	Excess demand is a situation, when at a given market price, quantity demanded is more than quantity supplied i.e. buyers are willing to buy more than what suppliers are willing to supply.
(b) Diagram & its basic information	<p style="text-align: center;">Excess Demand OR Shortage</p> <p>In the given diagram: - Y-axis depicts price in rupees of the commodity and X-axis</p>

6

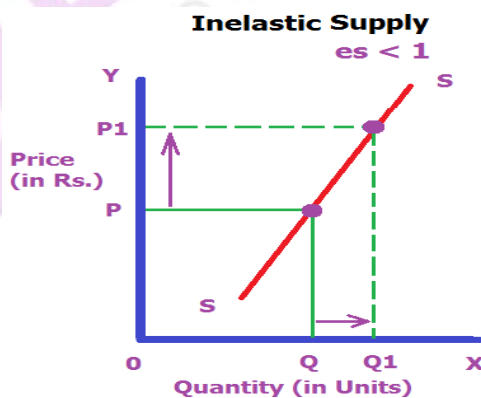
	<p>depicts quantity in units. - 'dd' is the demand curve and 'ss' is the original supply curve.</p>	
(c) Process of reaching equilibrium level	<p>In the above diagram, the present market price is 'OP_c' at which suppliers are willing to supply P_cM whereas buyers are willing to buy P_cN i.e. quantity demanded > quantity supplied.</p> <ul style="list-style-type: none"> - This excess demand causes shortage equal to 'MN' • Shortage leads to competition among buyers; and prices start rising. • Both law of demand and law of supply operate; • As a result demand starts contracting and supply starts expanding (as shown by arrow marks). • This process continues until the market equilibrium level 'E'. 	
(d) Conclusion	At equilibrium level 'E', equilibrium price is ' OPE ' and equilibrium quantity is ' OQ '.	
30	<p>(a) Meaning of Price elasticity of supply: "A degree measure of responsiveness of supply of a commodity to a unit change in its price." Supply of different goods responds differently to change in price.</p> <p>(b) Elasticity of supply can be broadly classified into the following five categories/ Kinds/Types/ Degrees:</p> <p>(i) Perfectly elastic supply ($es = \infty$): Supply of a commodity is said to be perfectly elastic if it changes i.e. expands or contracts to any extent without any change or with a very little change in price.</p> <div style="text-align: center;">  </div> <p>(ii) Elastic supply ($es > 1$): Supply of a commodity is said to be Elastic when percentage change in supply is more than percentage change in price.</p>	6



(iii) Unitary elastic supply ($es = 1$): Supply of a commodity is said to be unitary elastic when percentage change in supply is equal to percentage change in price.



(iv) Inelastic supply ($es < 1$): Supply of a commodity is said to be inelastic when percentage change in supply is less than percentage change in price.



(v) perfectly inelastic supply ($es = 0$): Supply of a commodity is said to be perfectly inelastic if it does not change at all in response to change in price of a commodity.

