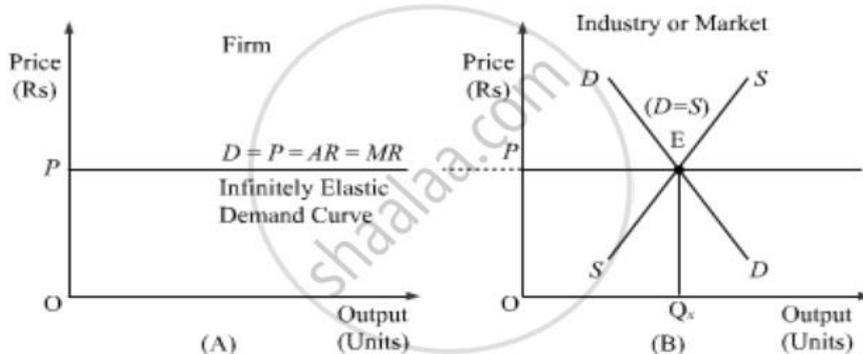


1. b) Index numbers cannot be used for forecasting
2. b) not linearly related
3. (c) Free entry and exit
4. d) Statement 2 is true and Statement 1 is false
5. (d) Assertion (A) is false but Reason (R) is true

6. Why is a firm under perfect competition a price taker? 3)
 - a. There are many firms and many buyers.
 - b. Product is homogeneous (exactly identical).
 - c. Industry determines price through market demand and supply.
 - d. A single firm is too small to influence price.
So the firm has to accept the market price.



7. Calculate coefficient of correlation (Actual Mean Method) 3)

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

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

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

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

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

Answer = 1 Perfect correlation .

8. The percentage of marks secured by 6 students is given below. Calculate rank Correlation. 3)

$$r_k = 1 - \frac{6 \left(\sum D^2 + \frac{1}{12} (m^3 - m) + \frac{1}{12} (m^3 - m) + \dots \right)}{N^3 - N}$$

$$\sum D^2 = 29.50; N = 6$$

$$= 1 - \frac{6 \left(29.50 + \frac{1}{12} (2^3 - 2) + \frac{1}{12} (2^3 - 2) \right)}{6^3 - 6}$$

$$= 1 - \frac{6(29.50 + 0.5 + 0.5)}{216 - 6} = 1 - \frac{6 \times 30.5}{210} = 0.128$$

Rank Coefficient of correlation = 0.128. There is very low degree of positive correlation.

9. Highlight three major difficulties in the construction of Index numbers. 3)

1. Selection of base year
Base year must be normal — not affected by wars, floods, pandemics, etc.
2. Selection of items
Which commodities to include? Different people consume differently.
3. Choice of weights
Deciding importance (weights) of each item is difficult.
4. Data collection problems (any)
Prices may be unavailable or unreliable.

10. Construct price index number from the following data by using Fisher's ideal method. 4)

$$\sqrt{\frac{\sum p_1q_0}{\sum p_0q_0} \times \frac{\sum p_1q_1}{\sum p_0q_1}} \times 100$$

$$\sqrt{\frac{690}{580} \times \frac{1150}{960}} \times 100 = \sqrt{14250} \times 100$$

$$= 11937 \times 100 = 119.37$$

Answer = 119.37

11. Calculate the coefficient of correlation of the data given below by the Step-Deviation method. 4)

	$\Sigma dx'$	$\Sigma dx'^2$		$\Sigma dy'$	$\Sigma dy'^2$	$\Sigma dx'dy'$
	= -3	= 19		= -3	= 19	= 19

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

$$= \frac{(6 \times 19) - (-3 \times -3)}{\sqrt{6 \times 19 - (-3)^2} \times \sqrt{6 \times 19 - (-3)^2}}$$

$$= \frac{114 - 9}{\sqrt{114 - 9} \times \sqrt{114 - 9}}$$

$$= \frac{105}{\sqrt{105 \times 105}} = \frac{105}{105} = 1$$