

1. Forecast the smd for year 2010 and 2012 on the basis of given data

Years	SALES (Y)	(X)	XY	X <sup>2</sup>
2002	40	-3	-120	3
2003	60	-2	-120	4
2004	75	-1	-75	1
2005	80	0	0	0
2006	100	1	100	1
2007	110	2	220	4
2008	115	3	345	9
N = 7	$\Sigma Y = 580$	$\Sigma X = 0$	$\Sigma XY = 350$	$\Sigma X^2 = 28$

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$$\frac{\Sigma Y}{N} :$$

$$a = \bar{Y} - b\bar{X}$$

$$= 82.857$$

$$Y = a + bX$$

$$\Rightarrow Y = 82.857 + 12.5X$$

$$b = \frac{\Sigma XY - n\bar{X}\bar{Y}}{\Sigma X^2 - n\bar{X}^2}$$

$$= \frac{350 - 7 \times 0 \times 500}{28 - 7 \times 0}$$

$$= 350/28$$

$$= 12.5$$

For 2010:

$$Y = 82.857 + 12.5 \times (5) = 145 \quad \text{profit (2010)} = 145$$

For 2012

$$Y = 82.85 + 12.5(7) = 170.35$$



Q2 To find the market demand schedule and market demand curve.

We need to aggregate the individual demand schedules of all consumers for each price.

Demand schedule:

Price 5:

$$\text{Quantity } A = 80 \quad B = 40 \quad C = 20$$

$$\text{Total} = 80 + 40 + 20 = 140$$

Price 10:

$$\text{Quantity } A = 10 ; B = 40 ; C = 15$$

$$\text{Total} = 10 + 40 + 15 = 65$$

Price 15:

$$\text{Quantity } A = 0 \quad B = 10 \quad C = 0$$

$$\text{Total} = 0 + 10 + 0 = 10$$

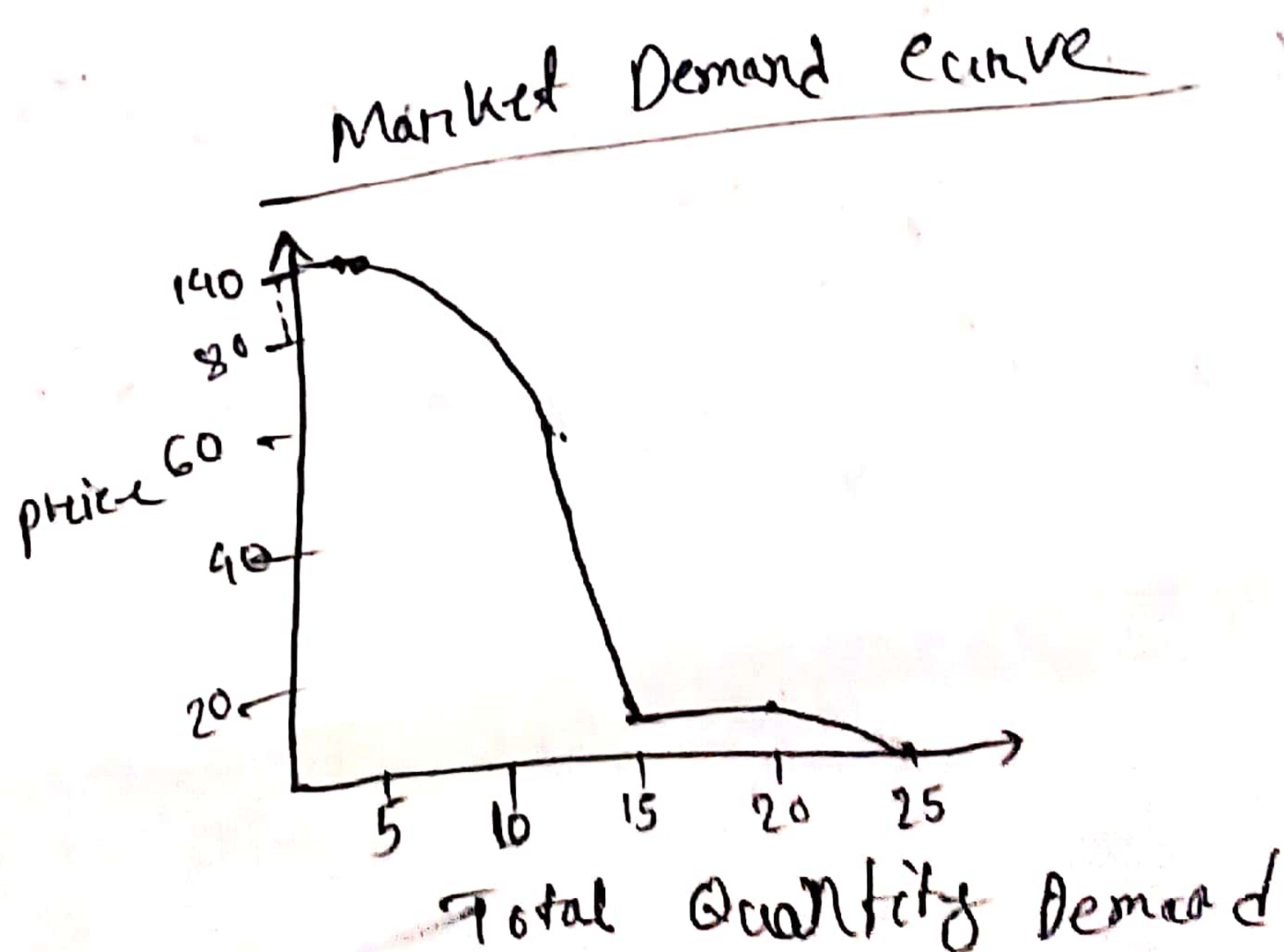
Price 25:

$$\text{Quantity } A = 0 = B = C$$

$$\text{Total} = 0$$

Market Demand schedule:

Price	Total Quantity
5	140
10	65
15	10
20	10
25	0





3 Given the demand func.

$$Q_d = 5w - Sp$$

Finding  $Q_d$  at  $R_3$  is :

$$p = 15$$

$$Q_d = 5w - 15s$$

Price to sell 200 units

$$Q_d = 200$$

$$200 = 5w - Sp$$

$$\Rightarrow Sp = 5w - 200$$

$$\Rightarrow p = \frac{5w - 200}{5}$$

Price for zero demand

$$Q_d = 0$$

$$0 = 5w - Sp$$

$$\Rightarrow Sp = 5w$$

$$\Rightarrow p = \frac{5w}{5}$$

$$Q_d \text{ at zero price } p=0: Q_d = 5w - S(0)$$

$$\Rightarrow Q_d = 5w$$

$$\therefore Q_d \text{ at } p_3 \text{ is } 5w - 15s$$

$$\therefore \text{The price to sell 200 units is } \frac{5w - 200}{5}$$



$$4. \quad Q_D = 5800 - 80P$$

$$Q_S = 1000 + 40P$$

Equating  $Q_S$  &  $Q_D$

$$5800 - 80P = 1000 + 40P$$

$$\Rightarrow 4800 = 120P$$

$$\Rightarrow P = 40$$

For GST of ₹12 more

$$P = 40 + 12$$

$$= 52$$

$$Q_D = 5800 - 80P$$

$$= 5800 - 80(52)$$

$$= 5800 - 4160$$

$$= 1640$$

~~Q<sub>D</sub>~~  
Quantity demand decreased.