

Assignment - 01

Here,

Q_s = Supply function

Q_d = Demand function

P = Price

(a) Given,

$$Q_s = -20 + 3P$$

$$Q_d = 220 - 5P$$

At equilibrium point,

$$Q_s = Q_d$$

$$\Rightarrow -20 + 3P = 220 - 5P$$

$$\Rightarrow 3P + 5P = 220 + 20$$

$$\Rightarrow 8P = 240$$

$$\therefore P = 30$$

So, equilibrium price is 30.

Now, putting the value of P in the given equations

$$Q_s = -20 + 3P = -20 + 3 \times 30 = 70$$

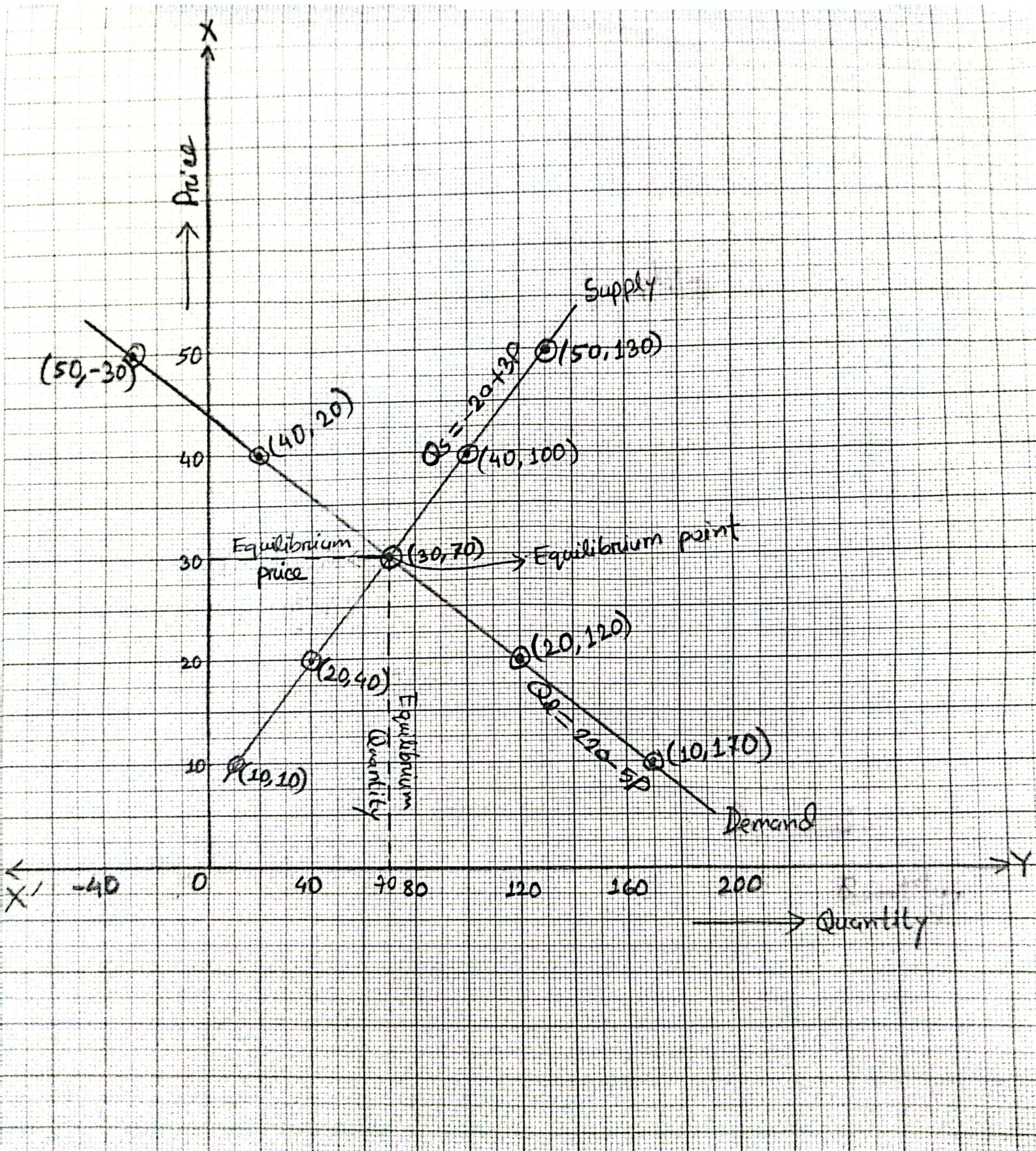
$$Q_d = 220 - 5P = 220 - 5 \times 30 = 70$$

So, equilibrium quantity is 70.

Now, Q_s , Q_d value for different price value is given below
in the following table

Price (P)	10	20	30	40	50
Supply (Q_s)	10	40	70	100	130
Demand (Q_d)	170	120	70	20	-30

$$Q_s - Q_d = 98 + 3P -$$



(b) Given,

$$Q_s = -95 + 8P$$

$$Q_d = 125 - 2P$$

At equilibrium point,

$$-95 + 8P = 125 - 2P$$

$$\Rightarrow 8P + 2P = 125 + 95$$

$$\Rightarrow 10P = 170$$

$$\therefore P = 17$$

So, equilibrium price is 17.

Now, putting the value of P in the given equations,

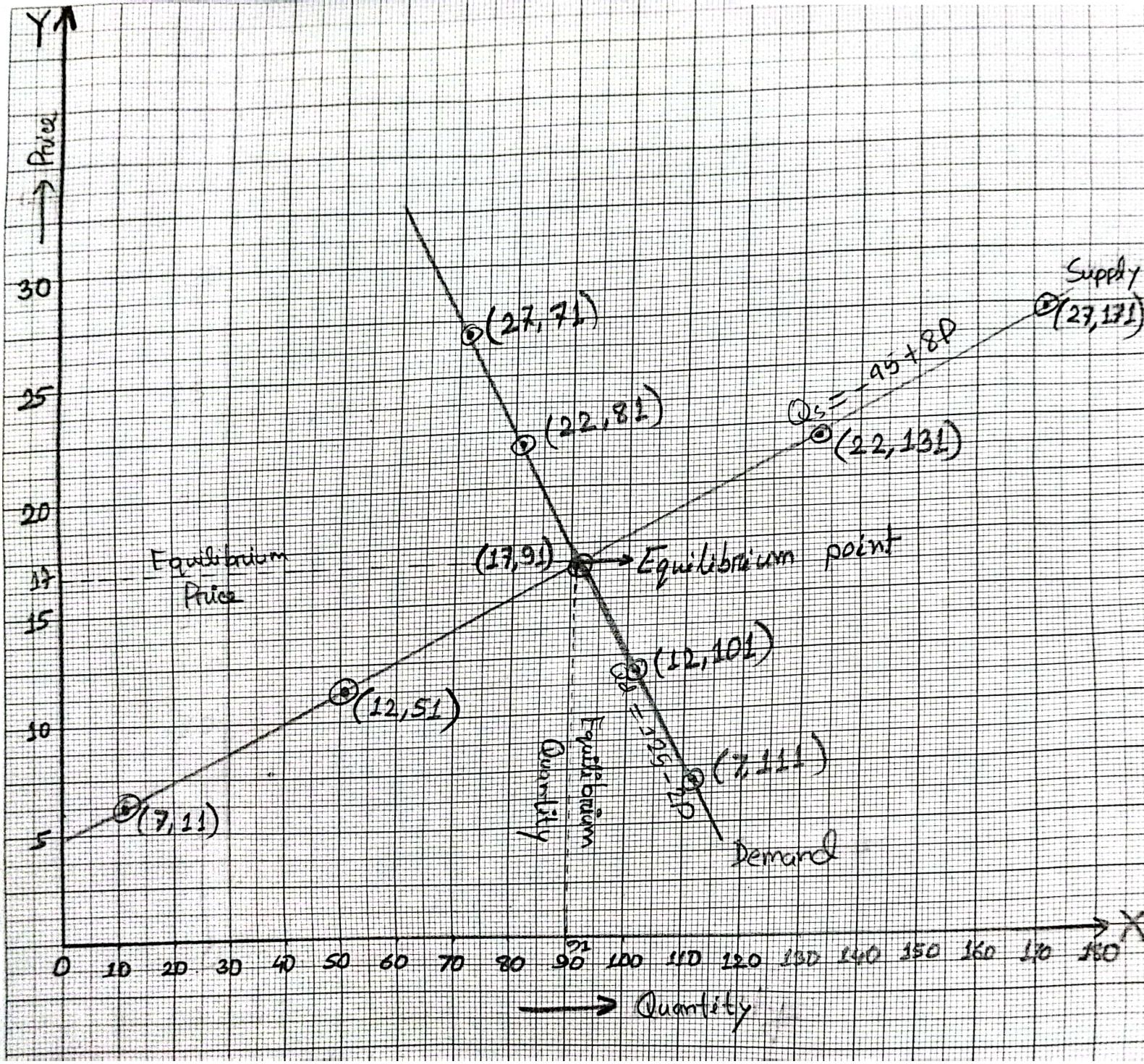
$$Q_s = -95 + 8P = -95 + 8 \times 17 = 91$$

$$Q_d = 125 - 2P = 125 - 2 \times 17 = 91$$

So, equilibrium quantity is 91.

Now, Q_s, Q_d value for different price value is given below in the following table:

Price (P)	7	12	17	22	27
Supply (Q_s)	11	51	91	131	171
Demand (Q_d)	111	101	91	81	71



(c) Given,

$$Q_s + 32 - 7P = 0$$
$$\Rightarrow Q_s = -32 + 7P$$

$$Q_d - 128 + 9P = 0$$
$$\Rightarrow Q_d = 128 - 9P$$

At equilibrium point,

$$Q_s = Q_d$$
$$\Rightarrow -32 + 7P = 128 - 9P$$
$$\Rightarrow 7P + 9P = 128 + 32$$
$$\Rightarrow 16P = 160$$
$$\therefore P = 10$$

So, equilibrium price is 10.

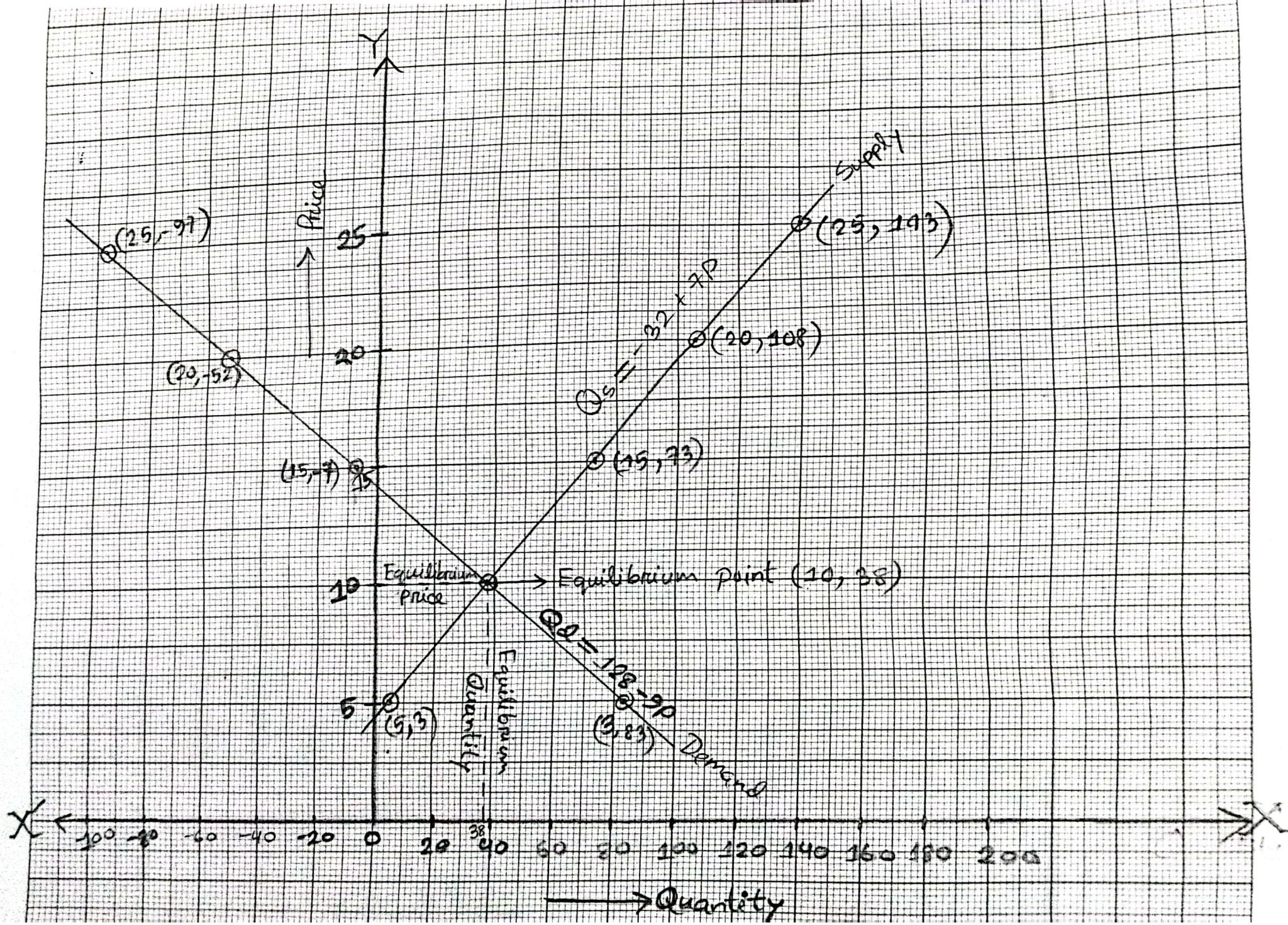
Now, putting the value of P in the given equations,

$$Q_s = -32 + 7P = -32 + 7 \times 10 = 38$$
$$Q_d = 128 - 9P = 128 - 9 \times 10 = 38$$

So, equilibrium quantity is 38.

Now, Q_s , Q_d value for different price value is given below in the following table:

Price (P)	5	10	15	20	25
Supply (Qs)	3	38	73	108	143
Demand (Qd)	83	38	-7	-52	-97



$$9P + 28 = 60 \Leftarrow$$

(d) Given,

$$Q = 9e + 80 - 60$$

$$13P - Q_s = 27qe - 80k = 60 \Leftarrow$$

$$\Rightarrow Q_s = 13P - 27 \text{ from eq. considering FA}$$

$$Q_d \neq 4P - 24 = 0$$

$$\Rightarrow Q_d = -4P + 24$$

At equilibrium point,

$$Q_s = Q_d$$

$$Q_s = Q_d$$

$$\Rightarrow 13P - 27 = -4P + 24$$

$$\Rightarrow 13P + 4P = 27 + 24 \text{ after adding both sides}$$

$$\Rightarrow 17P = 51$$

$$\therefore P = 3$$

So, equilibrium price is 3.

Now, putting the value of P in the given equations,

$$Q_s = 13P - 27 = 13 \times 3 - 27 = 12$$

$$Q_d = -4P + 24 = -4 \times 3 + 24 = 12$$

So, equilibrium quantity is 12.

Now, Q_s , Q_d value for different price value is given below in the following table:

Price (P)	1	2	3	4	5
Supply (Q_s)	-14	-1	12	25	38
Demand (Q_d)	20	16	12	8	4

