Economics for Engineers

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Cost Function

- Relationship between cost and output
- Technology, Price of factor input and output
- Short run and long run cost
- Accountants view of cost is not same with Economist's view of cost

Opportunity Cost

- Implicit and Explicit Cost
- Relative price of goods tend to reflect their opportunity cost
- Market prices of goods not always reflects their true social opportunity cost
- Historical cost as Sunk cost

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- The accounting cost which the producer pay to other factor owners for purchasing the various factors is also known as Explicit cost

Economic Cost= Accounting cost+ Implicit cost

Short run cost function

- Output of a firm can be changed subject to change in variable factor
- Fixed cost and variable cost components
- Total Fixed cost (TFC) and Total variable cost(TVC)

TC=TFC+TVC

AC= TC/Q, AFC=TFC/Q,+AVC=TVC/Q

AC=AFC+AVC

MC

TC=TVC

AC=AVC

MC

Fixed Cost, variable Cost and Total cost Q=F(L,K).. W=60, R=120/

Number of Workers (L)	Output (Metres of Cloth Produced Per Day) (Q)	Daily Wages Per Worker (W)	Total Variable Costs (W.L.)	Total Fixed Costs (TFC)	Short-Run Total Cost (TVC+TFC)
I	II	III	IV	V	VI
0	0	Rs. 60	0	Rs. 120	Rs. 120
1	10	60	Rs. 60	120	180
2	22	60	120	120	240
3	36	60	180	120	300
4	52	60	240	120	360
5	70	60	300	120	420
6	86	60	360	120	480
7	100	60	420	120	540
8	112	60	480	120	600
9	122	60	540	120	660
10	130	60	600	120	720
11	137	60	660	120	780
12	143	60	720	120	840
13	148	60	780	120	900
14	152	60	840	120	960
15	155	60	900	120	1020

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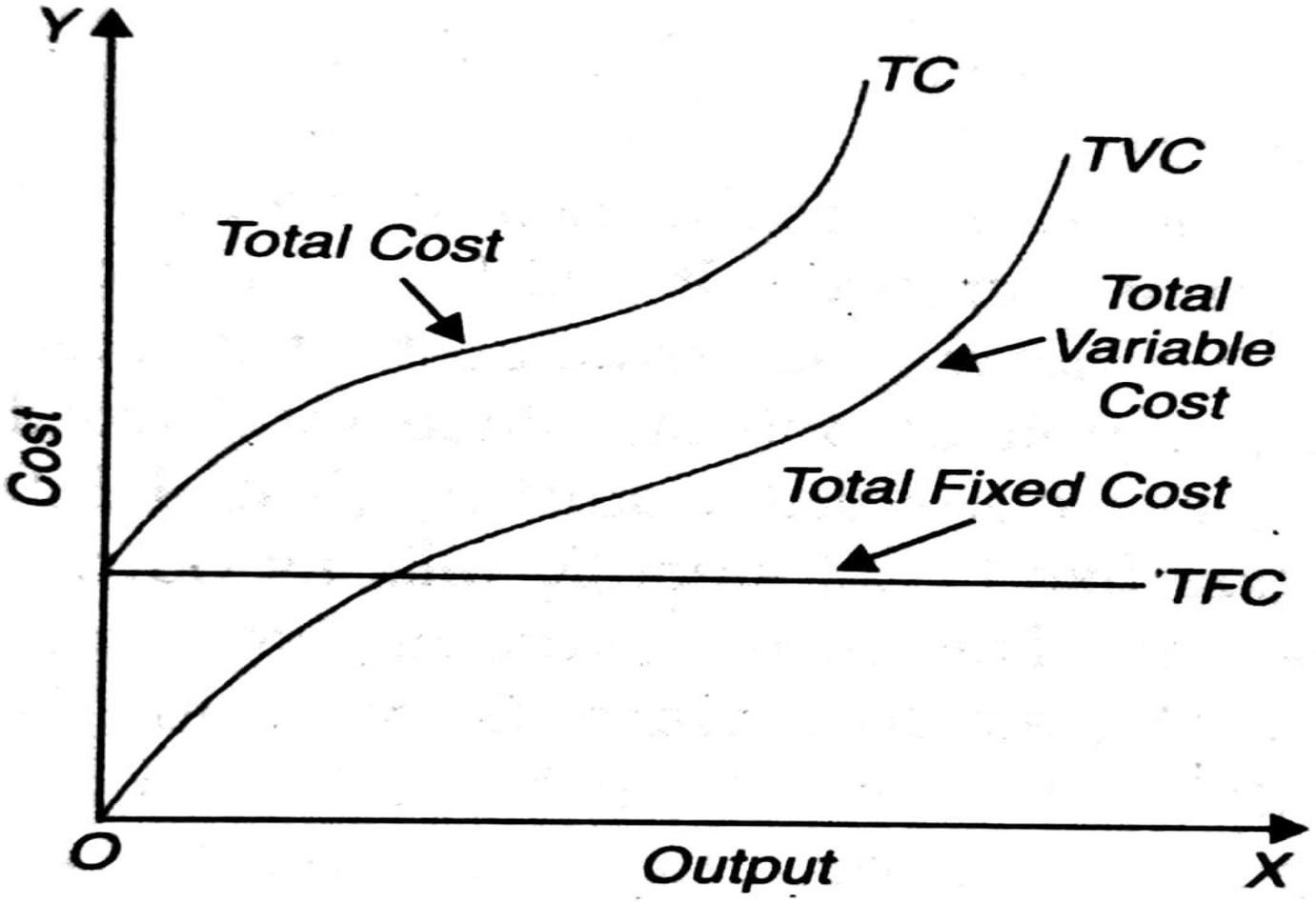
Y
TC
TVC
Total Cost
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Variable
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TFC
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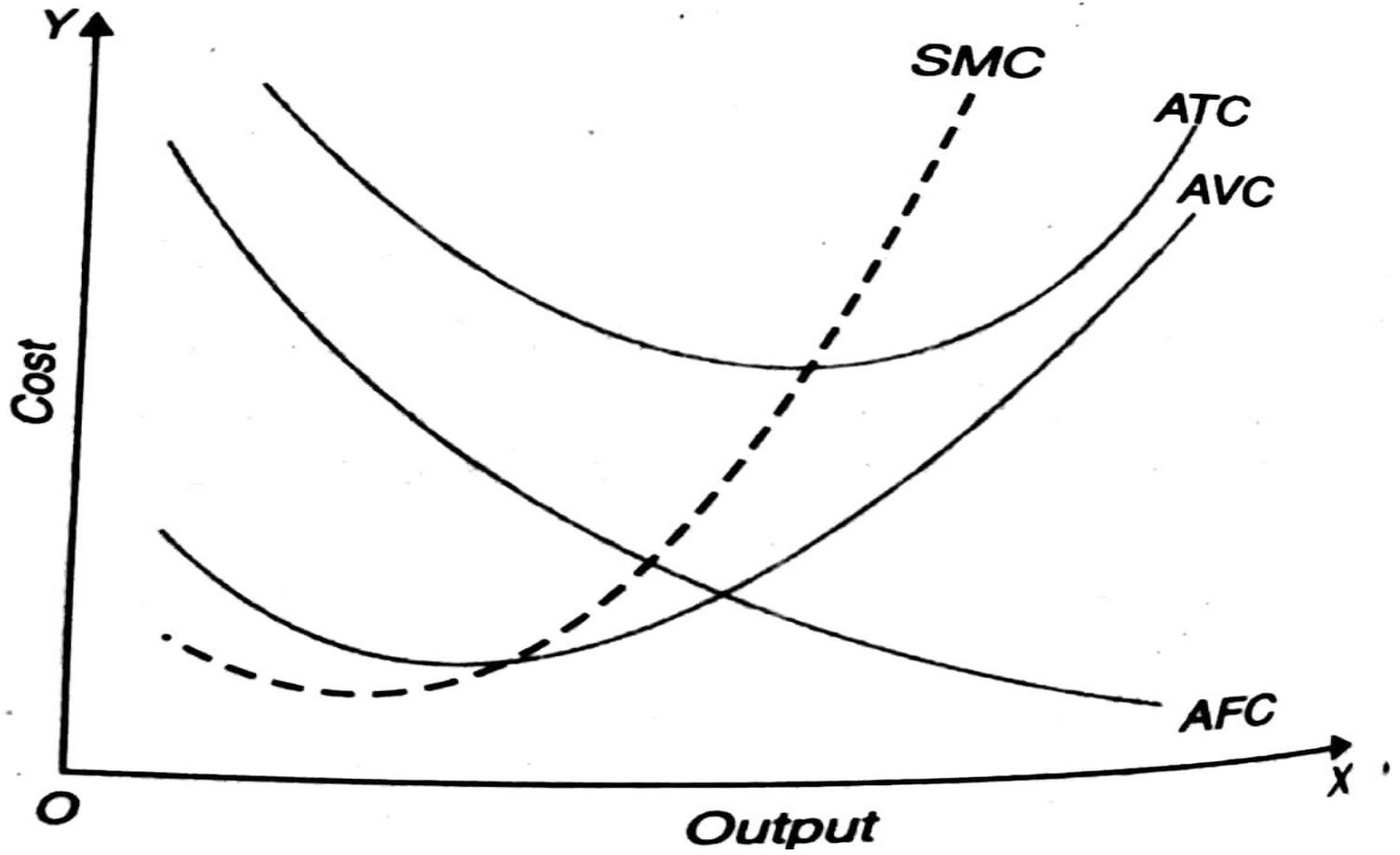
Output
X

Average and Marginal Cost.. AVG=50



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Number of Workers (L) I	Output of Cloth (Q) II	TVC (w= ₹ 60) $w.L$ III	AVC $\frac{TVC}{Q}$ IV	TFC V	AFC $\left(\frac{TFC}{Q}\right)$ VI	ATC $\left(\frac{TVC + TFC}{Q}\right)$ VII	MC $\left(\frac{\Delta\, TVC}{\Delta\, Q}\right)$ VIII
0	0	0	0	₹ 120	0	0	—
1	10	60	6	120	12	18	6.0
2	22	120	5.45	120	5.45	10.9	5
3	36	180	5.0	120	3.35	8.33	4.28
4	52	240	4.61	120	2.30	6.92	3.75
5	70	300	4.28	120	1.71	6.00	3.33
6	86	360	4.19	120	1.39	5.58	3.75
7	100	420	4.20	120	1.20	5.40	4.28
8	112	480	4.29	120	1.07	5.36	5.00
9	122	540	4.42	120	0.98	5.41	6.00
10	130	600	4.62	120	0.92	5.54	7.50
11	137	660	4.82	120	0.87	5.69	8.57
12	143	720	5.03	120	0.84	5.87	10.00
13	148	780	5.27	120	0.81	6.08	12.00
14	152	840	5.52	120	0.79	6.32	15.00
15	155	900	6.00	120	0.77	6.58	20.00

Computation of Marginal Cost

Output of Cloth in metres (Q)	Change in Output (ΔQ)	Total Cost (TC)	Change in Total Cost (ΔTC)	Marginal Cost (MC) $\left(\frac{\Delta TC}{\Delta Q}\right)$
0	—	₹ 120	—	—
10	10	180	₹ 60	₹ 6
22	12	240	60	5
36	14	300	60	4.28
52	16	360	60	3.75
70	18	420	60	3.33
86	16	480	60	3.75
100	14	540	60	4.28
112	12	600	60	5.00
122	10	660	60	6.00
130	8	720	60	7.50
137	7	780	60	8.57
143	6	840	60	10.00
148	5	900	60	12.00
152	4	960	60	15.00
155	3	1020	60	20.00


Thank
you!!