Decreasing Returns to scale.

CIA-II

1) When there are more workers, each is able to specialize.

2) $q = L/2$

q' = is doubled to $2L$

Then $q' = 2L/2 = L$.

Compare $q = q'$ by dividing q' by q.

$q'/q = L/L_2 = 2$

When amt of Labor is doubled, o/p is also doubled.

Hence there are Constant returns to scale.

b) $q = L^2 + L$

$q' = (2L)^2 + 2L = 4L^2 + 2L$.

deriding $\frac{q'}{q} = \frac{4L^2+12L}{L^2+L} > 2$

3) $MRTS = \frac{MP_L}{MP_K} = \frac{20}{80} = \frac{1}{4}$

$MRTS = \frac{1}{4}$

4) $q = 100 (K^{0.8} L^{0.2})$

for fixed labor & variable capital:

$K = 4 \Rightarrow q = (100)(4^{0.8})(49^{0.2}) = 660.22$

$K = 5 \Rightarrow q = (100)(5^{0.8})(49^{0.2}) = 789.25$

$MP_K = 129.03$

$K = 6 \Rightarrow q = (100)(6^{0.8})(49^{0.2}) = 913.19$

$\Rightarrow MP_K = 123.94$

$K = 7 \Rightarrow q = (100)(7^{0.8})(49^{0.2}) = 1033.04$

$\Rightarrow MP_K = 119.85.$

5) Opportunity cost is measured by computing the monetary amount that the owner's time would be worth in its next best use.

6) Economies of scale ⇒ relationship b/w cost & output
↳ How does cost change when o/p is doubled.
Returns to scale ⇒ what happens to o/p when all inputs are doubled.

7. Cobb Douglas production function:
$Q = b L^{a} c^{1-a}$

8.

O/P	TC	MC
0	200	—
1	300	100
2	390	90
3	470	80

10) 1) Single seller
2) No close substitutes
3) Price
4) No Entry
5. Firm & industry

9)

O/P	TR	TC	TProfit
0	40	45	-5
1	80	70	10
2	290	270	20
3	300	310	-10

TC - 390/80/

Profit = Revenue - cost

11)

Q	P	R (P=60)	C	π (P=60)	MC P=60	MR P=60	R (P=50)	MR (P=50)	π P=50
0	60	0	100	-100	—	—	0	—	-100
1	60	60	150	-90	50	60	50	50	-100
2	60	120	178	-58	28	60	100	50	-78
3	60	180	198	-18	20	60	150	50	-48
4	60	240	212	28	14	60	200	50	-12
5	60	300	230	70	18	60	250	50	20
6	60	360	250	110	20	60	300	50	50
7	60	420	272	148	22	60	350	50	78
8	60	480	310	170	38	60	400	50	90
9	60	540	355	185	45	60	450	50	95
10	60	600	410	190	55	60	500	50	90
11	60	660	475	185	65	60	550	50	75

at price = 50

at price = 60

12)

Qty	TP	MP	AP
0	0	—	—
1	225	225	225
2	600	375	300
3	900	300	300
4	1140	240	285
5	1365	225	273
6	1350	−15	225

14/5/22 CSBS 4½ Hr.

1, 2, 3, 5, 14, 16, 19, 47, 58,

5) $C = 100 + 2q^2$

$MC = 4q$

$P = 90 - 2q$

$MR = 90 - 4q$

a) Find monopoly price, quantity & level of profit.

$90 - 4q = 4q$

$\boxed{q = 11.25}$

$P = 90 - 2(11.25)$

$= 67.50.$

Level of profit $= PQ - C$

$= 67.50(11.25) - [100 + 2(11.25)^2]$

$= 406.25.$

b) Find the price, quantity & level of profit if the industry is competitive.

price = Marginal cost.

$90 - 2q = 4q$

$q = 15.$

At $q = 15$, price is equal to

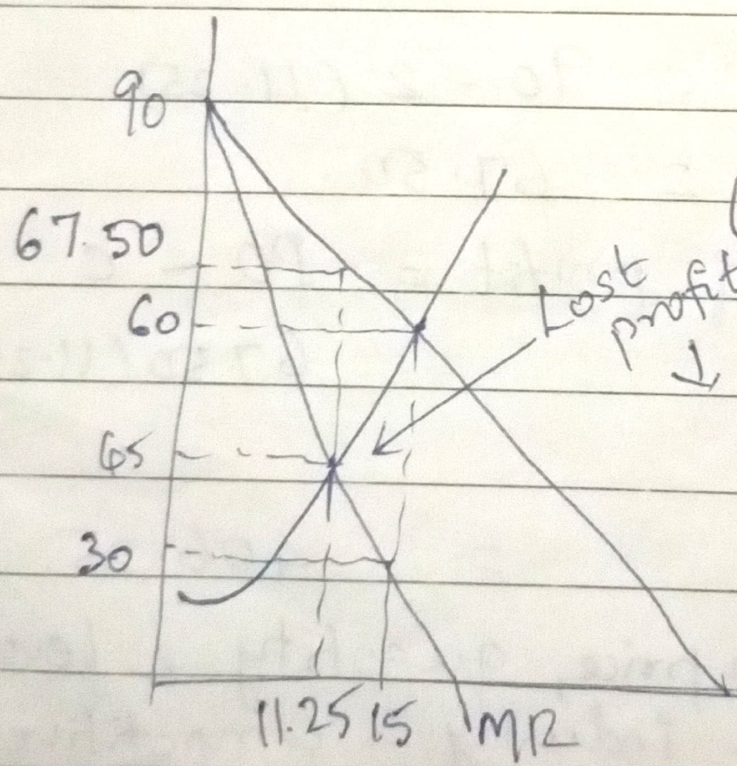
$$p = 90 - 2(15) = \$60.$$

Industry's profit $= 60(15) - [100 + 2(15)^2]$

$= 350.$

The difference between the two profit levels

$406.25 - 350 = 56.25.$



Because for each of 3.75 units (11.25 - 15) extra revenue earned was less than extra cost incurred

This area is

$(0.5)(3.75)(60-30)$

$= 56.25.$

Quantity	price	Tc	TR	MR	MC	AC
10	23	340	230	-	-	34
20	20	400	400	17	6	20
30	18	480	540	14	8	16
40	16	580	640	10	10	14.50
50	14	700	700	6	12	14
60	12	840	720	2	14	14
70	10	1020	700	-2	18	14.57
80	8	1280	640	-6	26	16