1. (a) Goods

As drawn leisure ↑ so work ↓

(b) For savers when r ↑
   (i) Substitution effect r ↑
   ⇒ move from current to future (Ans. save ↑)
   (ii) Income effect r ↑
   ⇒ income ↑
   ⇒ consumption ↑ in all periods
   ⇒ save ↓

(c) Opportunity cost is the value of the next best forgone alternative.

2. (a) \( MPP_L = \frac{dQ}{dL} = -0.75 \times 10^{-0.75} \times 3.75 \times 10,000 = 3.75 \times 10 \)

(b) \( MC = \# \text{ units labor needed to produce 1 more table} \times \text{cost of labor} \\
= (MPP_L)^{-1} \times \text{wage} = (0.375)^{-1} \times 50 = \$133.33 \)

(c) First get \( MRTS_{KL} \):
   \( Q = K^{0.25} L^{0.75} \Rightarrow Q^4 = KL^3 \Rightarrow K = Q^4 / L^3 \)

So \( MRTS_{KL} = -\frac{dK}{dL} = 3 \left( \frac{Q^4}{L^4} \right) = 3 \left( \frac{5000}{10000} \right)^4 = 0.16 \)

Also \( \frac{P_L}{P_K} = \frac{500}{200} = \frac{1}{4} \). Mix is not optimal since \( MRTS_{KL} \neq \frac{P_L}{P_K} \)

3. (a) K

Isoquants flatten, as \( K \) needs more \( L \) ↑ to hold output constant.
Then \( K \) ↑ and \( L \) ↓ as drawn

(b) Labor does ↓ due to substitution effect as switch to capital.
But labor ↑ due to scale effect as cheaper production means produce more.

(c) Isoquants are straight lines
⇒ at corner where use all capital (as drawn) or all labor.
(b) Due to a decreasing costs industry, as industry size expands, input prices fell, leading to lower costs for each firm and hence lower price. Increasing returns to scale if output more than doubles as inputs double. This favors large firms so competitive market unlikely.

5. (a) \( D = S \Rightarrow 20 - 10Q = 10 + 10Q \Rightarrow 10 = 20Q \Rightarrow Q = \frac{1}{2} \Rightarrow P = 15 \)

500,000 cars at $15,000 each

(b) \( P = \frac{1}{2} \times \frac{1}{2} \times 5 = \frac{1}{4} \)

\( CS = \frac{1}{2} - \frac{1}{2} = \frac{1}{4} \)

Total surplus

\( = 2 \times \frac{1}{4} = \frac{1}{2} \) billion

(c) \( P = \) price including tax

\( S_T = S_T + T \)

\( S_T \)

\( S \)

\( T \)

\( B = \) excess burden (welfare loss) of tax


Version B

1. Same as Version A

2. (a) See Version A

(b) \( MC = (MP_L)^{-1} x wage = (375)^{-1} x 50 = $266.67 \)

(c) \( MR_L S_{MC} = \frac{3}{10} \) (see version A).

\( \frac{100}{260} = \frac{1}{2} \neq MR_L S_{MC} \). Mix B is not optimal

3. (a) See Version A

5. (a) \( D = S \Rightarrow 30 - 10Q = 10 + 10Q \Rightarrow 20 = 20Q \Rightarrow Q = 1 \Rightarrow P = 20 \)

1,000,000 cars at $20,000

(b) See Version A
Multiple Choice

Questions Version A Version B

1. a a \[ MR = \frac{0.1R}{2Q} = \frac{30 \times 18 - 20 \times 20}{30 - 20} = \frac{540 - 400}{10} = 14 \text{ } \]
2. c b
3. b b \[ AC = a^2 - 4a + 9 \Rightarrow aACQ = 2a - 4 = 0 \text{ at } a = 2 \]
4. c d
5. c c \[ \text{Statutory incidence of } +a \text{, does not matter} \]

Out of 40

75% 28
Med 26
25% 23

A 33 or better
A - 31 - -
B+ 29 - -
B 27 - -
B- 25 - -
C+ 23.5 - -
C 22 - -
C- 20.5 - -
D+ 19 - -
D 18 - -
D- 17 - -