Question 2

6 points (1 + 3 + 1 + 1)

(a) 1 point:

- One point is earned for the correct calculation of the producer surplus: (1/2) × \$3 × 90 = \$135.

(b) 3 points:

- One point is earned for the correct calculation of the amount of tax revenue: \$2 × 60 = \$120.
- One point is earned for the correct calculation of the after-tax price received by sellers: \$4.
- One point is earned for the correct calculation of the producer surplus: (1/2) × \$2 × 60 = \$60.

(c) 1 point:

- One point is earned for concluding that the demand price is elastic AND showing the correct calculation of the elasticity coefficient using endpoint or midpoint method, or the correct calculation using the total revenue formula.

(d) 1 point:

- One point is earned for concluding that, owing to the tax, the market is no longer allocatively efficient AND that total surplus decreases or the tax creates a dead-weight loss.

Write in the box the number of the question you are answering on this page as it is designated in the exam.

2

2A

2. a) PS: $\frac{1}{2}(5-2)(90)$

$= \frac{1}{2}(3)(90)$

$= \$135$

b) i) $(6-4)(60)$

$= (2)(60)$

$= \$120$

ii) \$4

iii) PS $= \frac{1}{2}(6-4)(60)$

$= \frac{1}{2}(2)(60)$

$= \$60$

c) at \$5, TR $= \$5 \cdot 90 = \$450$

at \$6, TR $= \$6 \cdot 60 = \$360$ ↓

∴ P↑, TR↓

so the demand is price elastic (total revenue test)

d) ~~The~~ tax decreases allocative efficiency because it creates deadweight loss that was part of total surplus before the tax. Because of the tax, some consumers who were willing and able to buy ~~more~~ calculators at the equilibrium price are not willing and able to buy ~~the~~ calculators at the higher price after the tax.

Write in the box the number of the question you are answering on this page as it is designated in the exam.

2

2B

a) $\frac{1}{2}(90)(3) = \$135$

b) i) $2(60) = \$120$

ii) $4

iii) $\frac{1}{2}(60)(2) = \$60$

c) Between $5 and $6 the demand price is inelastic. At $5 exactly the damand price is unit elastic. Anything to the left of unit elastic price is inelastic.

d) The tax decrease allocative efficiancy. The tax causes supply to shift to the left, showing a decrease in supply. ~~[illegible]~~ At equilibrium quanity 90, price $5, all resources are used and the market is allocatively ~~[illegible]~~ efficient. As the supply decreases, less ~~q~~ output is being produced, not all resources are being used, and the market is allocatively inefficient.

2

Write in the box the number of the question you are answering on this page as it is designated in the exam.

2C

a) $\frac{1}{2}bh = \frac{1}{2}(\$3)(90) = \frac{270}{2} = \boxed{\$135}$

b) i) equilibrium price before tax: \$5

" " after tax: \$6

∴, tax revenue = \$6 − \$5 = $\boxed{\$1}$

ii) equilibrium price after tax = $\boxed{\$6}$

iii) $\frac{1}{2}bh = \frac{1}{2}(\$2)(60) = \frac{120}{2} = \boxed{\$60}$

c) The demand price is inelastic because an increase of \$2 via the tax only caused a change of \$1 in the equilibrium price. Because the ratio of change is less than 1, the demand price is inelastic.

d) Allocative efficiency would occur at a higher price (at which P=MC for a firm). Because the shift left of the supply curve increased market price, firms will increase their prices to keep up with industry. Therefore allocative efficiency will occur at that higher price where P=MC.

Question 2

Overview

This question tested students' understanding of tax incidence, price elasticity, and allocative efficiency.

Sample: 2A
Score: 6

The student earned all 6 points for this question.

Sample: 2B
Score: 4

The student lost 1 point in part (c) for incorrectly asserting that demand is inelastic between the prices of $5 and $6. The student lost 1 point in part (d) for not providing an adequate explanation of why the tax reduced allocative efficiency.

Sample: 2C
Score: 2

The student earned 1 point in part (a) for correctly calculating producer surplus before the tax. In part (b)(iii) the student earned 1 point for correctly calculating the producer surplus after the tax.