Question 2

5 points \((2+2+1)\)

(a) 2 points:
- One point is earned for the correct side-by-side graphs with a horizontal machine supply curve for John Lamb (S, D, \(P_R\), \(S_M\)).
- One point is earned for showing the equilibrium rental quantity of machines, \(Q_L\), at the intersection of MRP and the horizontal supply curve.

(b) 2 points:
- One point is earned for stating that there will be no change to the marginal product curve for machine-hours.
- One point is earned for explaining that the MRP curve for machine-hours will decrease (shift to the left) because the decrease in demand decreases the price of widgets.

(c) 1 point:
- One point is earned for correctly calculating the rental price of a machine:
\[
\frac{MP_L}{w} = \frac{MP_K}{r} = \frac{28}{14} = \frac{60}{r}.
\]
Therefore, \(r = $30\).
Write in the box the number of the question you are answering on this page as it is designated in the exam.

2A

2. a) MACHINE MARKET

John Lamb Company

Rental price

S

Rental price

PR

D

MC = S

Quantity

Q

Quantity

b) No effect on MP curve for machine-hours.

(ii) Marginal revenue product curve for machine-hours would shift down, when demand for widgets decrease, the price of widgets also decrease. MRP = MP x P.

Since MP does not change, a decrease in price decreases MRP for every value of machine-hours.

c) Cost-minimizing combination of inputs occurs when MP of per unit cost of input A equals the MP per unit cost of input B:

\[
\frac{MP_A}{wage} = \frac{MP_M}{rent}
\]

\[
\frac{28}{14} = \frac{60}{RENT}
\]

Therefore, hourly rent price of a machine is $30.
Write in the box the number of the question you are answering on this page as it is designated in the exam.

John Lamb Company

(a) 

(b) i. move to the left

ii. The decrease in demand will cause the MRP for machine-hours to decrease because less is being demanded and D = MRP.

\[
\frac{28}{14} = \frac{60}{x} \quad x = 30 \quad \text{hourly rental price of a machine} = \$30
\]
Write in the box the number of the question you are answering on this page as it is designated in the exam.

(a)?

(b) i - the marginal product curve for machine-hour will decrease and it will cost more to produce marginal product.

ii - The marginal revenue product curve for machine-hour will stay the same because in a perfectly competitive industry or market, the perfectly elastic demand curve is equal to the marginal revenue curve.

c) $30
Question 2

Overview

This question assessed students’ proficiency with a factor-market model. Part (a) asked students to draw the graphs for a factor market and a representative buyer. Part (b) tested for familiarity with the concepts of marginal product and marginal revenue product. Part (c) assessed students’ understanding of the conditions for the cost-minimizing combination of inputs.

Sample: 2A
Score: 5

The student answered all parts correctly and so earned all 5 points.

Sample: 2B
Score: 3

The student lost 1 point in part (b)(i) for incorrectly stating that the marginal product moves “to the left.” The student lost 1 point in part (b)(ii) for the incorrect explanation of why the marginal revenue product (MRP) decreases.

Sample: 2C
Score: 1

The student earned 1 point in part (c) for correctly calculating the hourly rental price of the machine.