Question 2

6 points (1 + 2 + 1 + 1 + 1)

(a) 1 point:
   - One point is earned for calculating the marginal product of the third worker: $450/$5 per unit = 90 units.

(b) 2 points:
   - One point is earned for defining the law of diminishing returns: as more and more units of a variable input are added to a fixed input, the output increases at a decreasing rate.
   - One point is earned for the explanation that diminishing returns occur because of the overuse of the fixed input.

(c) 1 point:
   - One point is earned for stating that diminishing marginal returns first occur with the hiring of the third worker.

(d) 1 point:
   - One point is earned for stating $300.

(e) 1 point:
   - One point is earned for stating that the demand for labor will increase because the increase in the product price raises the marginal revenue product of labor.

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

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2

a) MRPL = MPL · P
   marginal revenue   marginal   = $5
   product   product

$\Rightarrow 450 = MPL(3) \cdot 5 \Rightarrow MPL(3) = 90$

Answer: 90

b) When the use of one factor of production
(for example, labor) increases for some point
marginal product of this input will fall
in condition that other inputs do not change
It occurs because other factors of production (for
example capital) do not change. And increase in
for example, labor for some point will prevent
workers from doing their jobs (amount of equipment is unchanged)
$\Rightarrow$ each extra worker will increase out put less than
before. $\Rightarrow$ MPL will fall

c) $L = 1$ $MPL = \frac{450}{5} = 90$
   $L = 2$ $MPL = \frac{500}{5} = 100$
   $L = 3$ $MPL = 90$
   $\Rightarrow$ Answer: hiring 3 workers

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d) $MRPL(5) = W = \$300$
  ` the wage
    rate $\Rightarrow$

   Answer: $\$300$

e) The demand for labor is derived demand for
   output $\Rightarrow$ since P increases, MRPL also
   increases $\Rightarrow$ firms will hire more workers $\Rightarrow$
   the demand for labor will increase

2.

(a) $MRP_L = MPP_L \times P_x$

$450 = 5 \times MPP_L$

MPP_L of 3rd worker = 90.

(b) The law of diminishing marginal returns states that taking all other inputs constant, the successive addition of 1 or more unit of a the variable input will firstly increase output at increasing rate, then, increase output at decreasing rate, and finally, one extra unit of input addition will cause the output to decrease. This occurs because while the variable input, e.g. labor is increasing, at the all other inputs such as capital, raw materials are kept constant. Finally, there will be a surplus of or variable inputs and they compete for other inputs to produce production process, causing this in underutilization of resources will cause the output level to decrease, as well as marginal marginal physical product, a resulting in a do diminishing marginal return.

(c) Diminishing marginal returns first occur with the hiring of the 3rd worker

(d)

(e) According to the law of supply demand, an increase in price will cause the quantity demanded to decrea decrease, ceteris paribus. Since the demand for labor to produce a product in resource market is derived from the demand for the product in market, a decrease in demand product

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

2.

2B
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for the product will cause the demand for labor to produce this product to decrease as well.

2)

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

a) marginal product = $\frac{500-450}{5}$ = -10

b) The law of diminishing marginal returns states
that ~~is~~ ~~output~~ with increasing output, the
~~relative rate~~ marginal return would decrease.
(In ~~this~~ some cases ~~they~~ marginal return = marginal revenue)

c) It first occured with the hiring of the 3rd worker

d) The highest wage is $5.

e) If the market price of product increases, the quantity
demanded will drop. This will result in ~~an~~ a surplus of
product. Thus, it will lead to a decrease of demand
of labor.

Question 2

Sample: 2A
Score: 6

The student earned all 6 points for this question.

Sample: 2B
Score: 4

The student lost 1 point in part (d) for not answering. The student lost 1 point in part (e) for stating incorrectly that the demand for labor will decrease.

Sample: 2C
Score: 1

The student earned 1 point in part (c) for stating that diminishing returns occur "with the hiring of the 3rd worker."