AP® MICROECONOMICS
2008 SCORING GUIDELINES (Form B)

Question 3

7 points (1 + 1 + 1 + 1 + 1 + 2)

(a) 1 point:
- One point is earned for stating the second worker.

(b) 1 point:
- One point is earned for stating the MP of the fifth worker is five units.

(c) 1 point:
- One point is earned for calculating the MRP of the third worker: $20.

(d) 1 point:
- One point is earned for stating the GW will hire four workers.

(e) 1 point:
- One point is earned for calculating the profit: $2.

(f) 2 points:
- One point is earned for stating that more workers will be hired.
- One point is earned for the explanation that the increase in the price of hats raises the marginal revenue product, hence the demand for labor.

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

3   3A

a) Diminishing marginal returns begin after the 2nd worker, since the marginal physical product of the 3rd worker is less than the marginal physical product of the 2nd while MP of the 2nd is greater than MP of the 1st.

b) Marginal physical product of the 5th worker is Total product of 5 workers − Total product of 4 workers = 49 − 44 = 5 (hats)

c) Since it is a perfectly competitive market P = MR. $MP(3) = 36 - 26 = 10$ (hats) $MRP = MR \cdot MP$
MRP of 3rd worker = $2 \cdot 10 = 20$ ($)

d) Profit is maximised when MRP = Wage
$MRP(4) = 16$ $
$MRP(5) = 10$ $
Wage = 15 $
Profit (4 workers) = $44 \cdot 2 - 4 \cdot 15 = 88 - 60 = 28$ ($)
Profit (5 workers) = $49 \cdot 2 - 5 \cdot 15 = 98 - 75 = 23$ ($)
Profit is maximized when GW hires 4 workers

e) Profits = $2 \cdot 26 - 2 \cdot 15 - 20 = 2$ ($)
Profits = output × Price − number of workers × wage − fixed costs

f) The number of workers hired will increase since for the same wage rate each worker will bring more revenue, i.e MRP > Wage. The firm will hire more workers until MRP = Wage.

Question #3, #2(a)

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

<Q#3>

(a) 2

(b) 5

(c) $10 \times 2 = \$20$

(d) 1

(e) $P - ATC = 52 - 50 = \$2$

(f) If the price of hats increases, the MR will increase so the point where MR=MC will increase as well, therefore, the number of workers hired in the short run will increase.

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

.3

3C

number of work		0	1	2	3	4	5	6
output		0	10	26	36	44	49	52
MPL		–	10	16	10	8	5	3
MRP_L		–	20	22	30	16	10	6	3

MR a)   After the ~~second~~ 3rd worker

min AP_L there is diminighi marginal returns

MR_L Because MR

b) $MP_L(5) = 5$

c) $MRP_L = MR \cdot MP_L$ $MR = \dfrac{TR_2 - TR_1}{Q_2 - Q_1} = \dfrac{P(Q_2)\cdot Q_2 - P(Q_1)\cdot Q_1}{Q_2 - Q_1}$

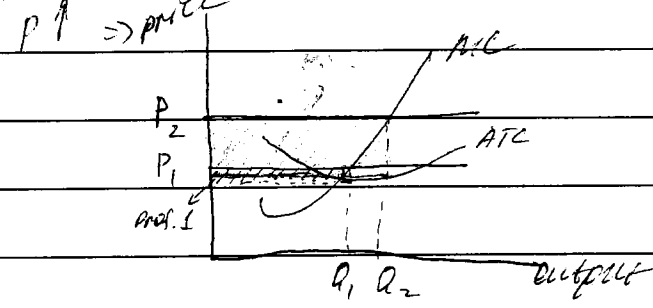$MRP_L(3) = 30 \cdot$ ~~10/300~~

d) ~~If~~ ~~The~~ 3 workers should be employed

e) $FC = \$20$

2 workers $TR = 26 \cdot 2 = 42$; $TC = \$20 + 2 \cdot \$15 = 20 + 30 = 50$
~~P = \$2~~   ~~ATC = 50~~

~~In the short-run there is economic loss~~

$ATC = \dfrac{50}{26} \approx 1.9$

Economic profit $= (P - ATC) \cdot Q = \$(2 - 1.9) \cdot 26 \approx \$ 2.6$.

f) The number of hired workers would ~~increase~~ stay the same , because

$P \uparrow \Rightarrow pr^{ce} \uparrow$

Question 3

Sample: 3A
Score: 7

The student earned all points in this question.

Sample: 3B
Score: 5

The student earned all points in parts (a), (b), and (c). The student did not earn the point in part (d) because an incorrect number of workers is given. The student earned the point in part (e) but lost 1 point in part (f) for the explanation that more workers will be hired because the marginal revenue increases, rather than because the marginal revenue product increases.

Sample: 3C
Score: 1

The student did not earn the point in part (a) because the marginal product begins to diminish after the second worker, rather than after the third. The student earned the point in part (b) but did not earn the point in part (c) because the marginal revenue product is incorrectly computed. The student did not earn the point in part (d) because four workers should be employed, rather than three. The student did not earn the point in part (e) because profit is incorrectly computed. No points were earned in part (f) because the student states that the number of workers hired "would stay the same."