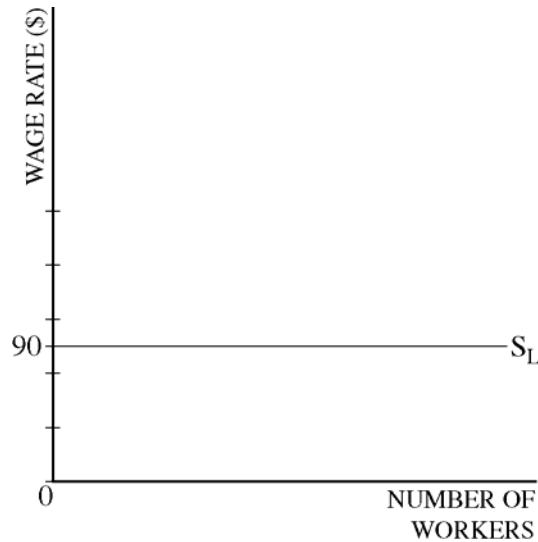


**AP[®] MICROECONOMICS
2007 SCORING GUIDELINES**

Question 2

6 points (1 + 2 + 3)



(a) 1 point:

- One point is earned for correctly labeled axes with a horizontal labor supply curve at \$90.

(b) 2 points:

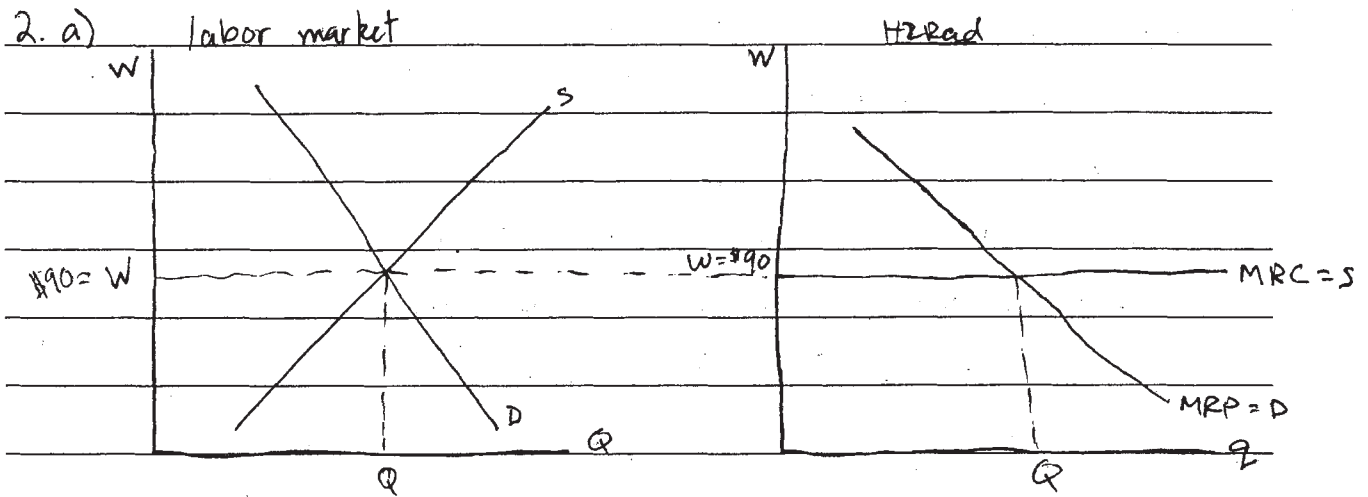
- One point is earned for identifying the profit-maximizing output as 75, or between 75 and 79.
- One point is earned for stating that MRP is greater than \$90 for the fifth worker, but less than \$90 for the sixth worker.

(c) 3 points:

- One point is earned for stating that the quantity of labor HZRad hires increases.
- One point is earned for the explanation that the marginal product of labor increases at each input level, or the marginal product of labor curve shifts to the right, or the demand curve for labor shifts to the right.
- One point is earned for stating that the wage rate will remain constant.

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

Question 2 2A,



2. b) HZRad will hire workers ~~as~~ as long as $MRP \geq MRC$.

Number Workers	Q Radios (per day)	TR	MRP
0	0	0	-
1	20	400	400
2	45	900	500
3	60	1200	300
4	70	1400	200
5	75	1500	100
6	79	1580	80

$TR = \text{output} \times \20 (revenue)

$MRP = \frac{\Delta TR}{\Delta \# \text{ workers}}$

The MRC of workers is \$90. Therefore HZRad will hire 5 workers b/c $\$100 > \90 and $\$80 < \90 .

They will produce 75 radios at this level.

Question 2

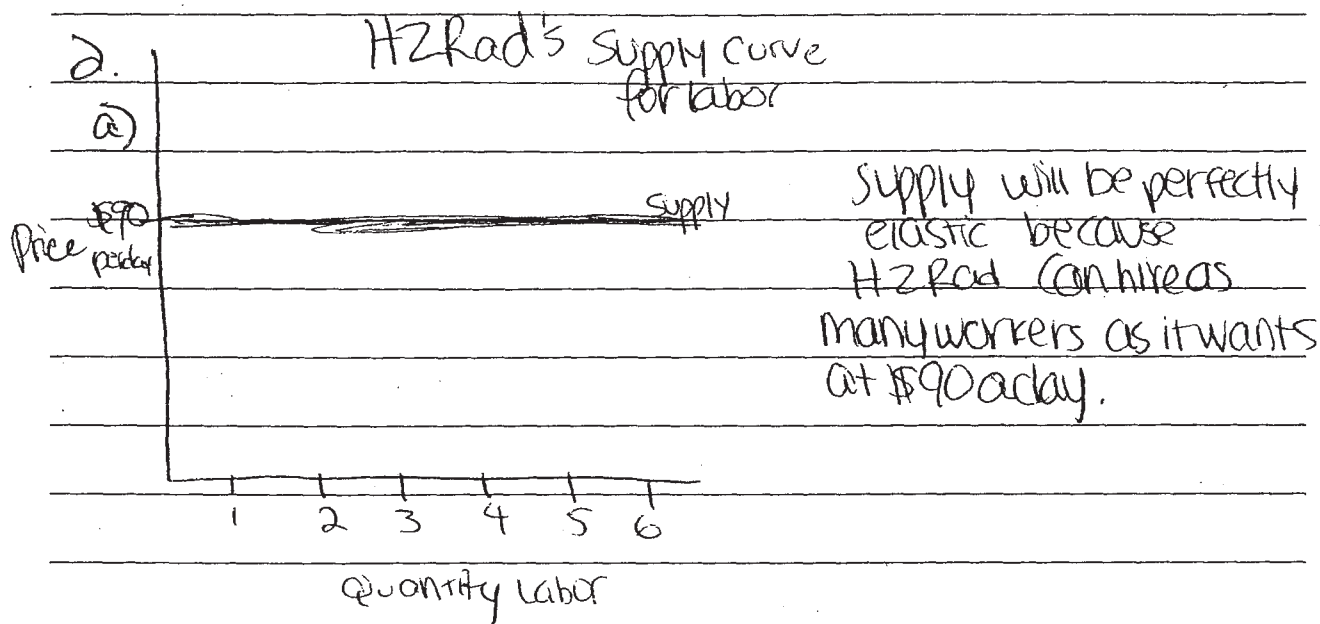
Write in the box the number of the question you are answering on this page as it is designated in the exam.

2A₂

c) \uparrow productivity $\Rightarrow \uparrow$ MP $\Rightarrow \uparrow$ MRP (which is $MR \cdot MP$) $\Rightarrow \uparrow$ D
for workers $\Rightarrow \uparrow$ q

i. They will hire more workers (see above logic).

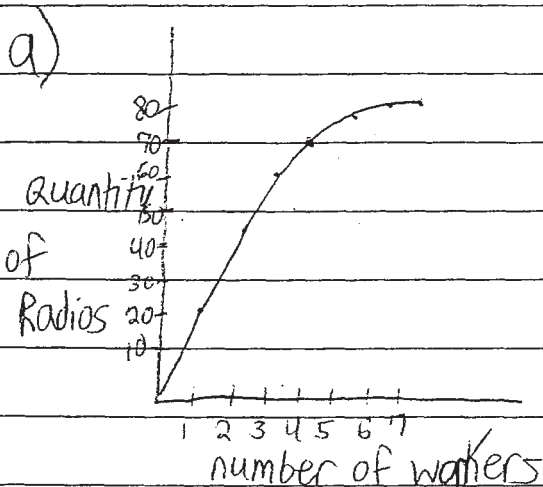
ii. Since HZRad is the only firm that is effected by the new technology, there will be no supply or demand shifts in the labor market. HZRad is a wage-taker and the wage didn't change, so HZRad does not change its wages paid.



b) HZRad's profit-maximizing output level is when 75 radios are produced (per day). This is because ^{is closest to} at this point, $MFC = MRP$. Since the MP is 5 and the MR is \$20. $MR \times MP = MRP$ and $MRP = \$100$. Since MFC is \$90, this is the closest this firm can get to hiring the profit-maximizing # of workers (where the amount each worker brings in = wage).

c) i) HZRad will hire more workers because if workers become more productive, $MP \uparrow$ and when $MP \uparrow$ (since MP is a factor of MRP), $MRP \uparrow$, and $MRP = \text{Demand for labor}$. Therefore, demand for labor increases & more workers are hired.

ii) The new wage to these workers will be smaller, since more workers are being hired. This can be shown since there was a shift (increase) in supply due to technology. Price (wage) \downarrow , and $Q \uparrow$.



b) HZRad's profit maximizing output level is 75.
By finding the marginal returns, HZRad would stop hiring after 5 workers, because the wage of \$90 is more than the marginal profit of 4 more radios, which is \$80. At the output level of 75, marginal profit is \$100, so they still make money.

c) i) The new technology will decrease the quantity of unskilled labor hired because each worker is more productive, so not as many are needed.

ii) The workers will receive increased wages since there are now less ~~worked~~ workers hired.

**AP[®] MICROECONOMICS
2007 SCORING COMMENTARY**

Question 2

Overview

The intent of the question was to evaluate students' understanding of profit-maximizing labor usage by a firm.

Sample: 2A

Score: 6

The student earned all points in this question.

Sample: 2B

Score: 4

The student lost 1 point in part (b) for failing to show that the sixth unit of labor hired will reduce profits. In part (c)(ii) the student lost 1 point for incorrectly concluding that the rightward shift in the demand for labor will cause the wage rate to fall, even though the labor supply curve is horizontal.

Sample: 2C

Score: 2

The student earned 2 points in part (b) for a correct conclusion and an adequate explanation.