2. (a) Draw a correctly labeled graph showing a typical monopoly that is maximizing profit and indicate each of the following.
   (i) Price
   (ii) Quantity of output
   (iii) Profit

   (b) Describe and explain the relationship between the monopolist's demand curve and marginal revenue curve.

   (c) Label each of the following on your graph in part (a).
   (i) Consumer surplus
   (ii) Deadweight loss

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3. Assume that Company XYZ is a profit-maximizing firm that hires its labor in a perfectly competitive labor market and sells its product in a perfectly competitive output market.

   (a) Define the marginal revenue product of labor (MRP_L).

   (b) Using correctly labeled side-by-side graphs, show each of the following.
   (i) The equilibrium wage in the labor market
   (ii) The labor supply curve the firm faces
   (iii) The number of workers the firm will hire

   (c) Company XYZ develops a new technology that increases its labor productivity. Currently this technology is not available to any other firm. For Company XYZ, explain how the increased productivity will affect each of the following.
   (i) Wage rates
   (ii) Number of workers hired

END OF EXAMINATION

Question 3

Correct Answers:

Part a: The marginal revenue product of labor is the change in total revenue associated with the change in output following a unit change in the employment of labor.

MRP of labor = MR (or P of output) x MPP of labor.

Part b: The perfectly competitive labor market will have a downward-sloping labor demand curve and an upward-sloping labor supply curve. There will be an equilibrium wage and quantity of labor. The firm will be a wage taker and have a perfectly elastic labor supply at the market wage rate. The firm's labor demand curve is its marginal revenue product of labor curve. Thus, the profit-maximizing firm will hire the amount of labor associated with the intersection of its marginal revenue product of labor curve and its horizontal labor supply curve. The firm will pay each unit of labor the market wage.

Part c: With an increase in labor productivity that affects only Company XYZ there will be no perceptible change in labor market. The equilibrium wage stays the same. Company XYZ will have an outward shift in its marginal revenue product of labor (or labor demand) curve, leading to more employment at the unchanged market wage.

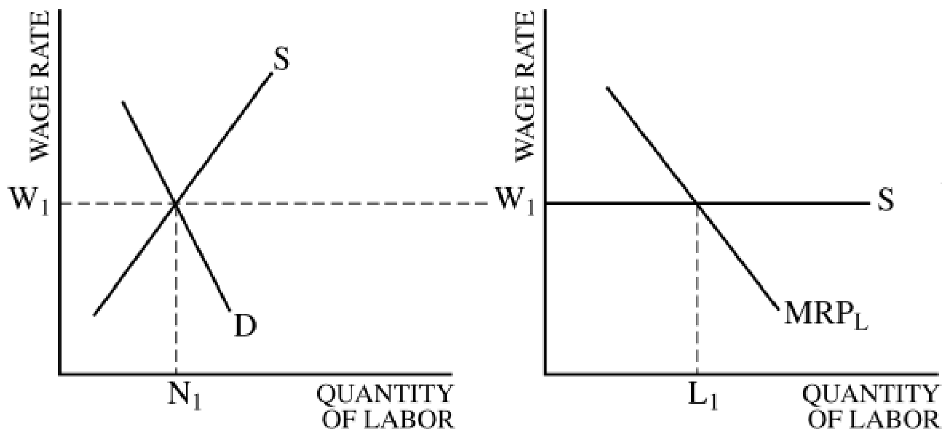
Question 3 (cont'd)

Grading Rubric:

Point allocations: **(7 points: 1+4+2)**

(a) 1 point - definition: the additional revenue from hiring an additional worker or MRP=MP x MR or MRP=MP x P

(b) 4 points:



1 point for the correctly labeled labor market graph showing equilibrium wage.

1 point for the firm graph indicating a downward-sloping demand (MRP_L) curve.

1 point for the horizontal labor supply curve for the firm.

1 point for showing quantity of labor for the firm at the intersection of labor supply and labor demand.

Question 3 (cont'd)

(c) (2 points)

1 point - wage rate for the firm remains constant at the original wage.

1 point - the number of worker hired by XYZ increases because XYZ's MRP increases or labor demand curve shifts out.