

# MIDTERM EXAM 2

Version A

FULL NAME: \_\_\_\_\_  
STUDENT ID: \_\_\_\_\_

Your TA is (circle one)    BAKHIT    JING    MIR    QIANZHENG

TUTORIAL SECTION: \_\_\_\_\_

**INSTRUCTIONS:** you have 1 hour 30 minutes to complete the exam. Write all your answers in the space provided; any work outside the space provided will be given zero credit. You can write in either pen or pencil. If you write in pencil your exam cannot be regraded.

**The exam has 6 pages and 2 sections:**

- 15 multiple choice questions
- 4 short answer questions

MC \_\_\_\_\_

WRITTEN PART \_\_\_\_\_

**TOTAL** \_\_\_\_\_

**I. MULTIPLE CHOICE.** 15 questions, each question is worth 1 point. Circle only one answer that you think is the best.

1. Choose what is true about a perfectly competitive market:  
(A) market demand curve is horizontal  
(B) firms compete with each other to maximize profit  
(C) each firm must offer the lowest price to sell its output  
(D) in short run firms can make positive, zero, or negative profit  
(E) all of the above
2. Firm uses capital and labor for production. The production process satisfies the principle of diminishing marginal productivity. Currently  $MPL = 30$  and  $MPK = 50$ . Wage is 10 dollars per unit of labor and price of capital is 20. Based on these numbers we can conclude that  
(A) firm should hire only workers because labor is cheaper  
(B) firm should only use capital because it is more productive  
(C) firm should sell some capital and hire more workers  
(D) firm should lay-off some workers and buy more capital  
(E) firm is maximizing profit if price is higher than 0.4
3. When John hired the last worker for his bakery, the output of the bakery did not change. This means that at the current level of labor total product is \_\_\_\_\_ and average product is \_\_\_\_\_  
(A) at maximum point; positive and decreasing  
(B) zero; negative and decreasing;  
(C) zero; zero  
(D) negative; zero and decreasing  
(E) at minimum point; zero
4. A firm produces 120 units of output, at this point  $ATC = MC = 20$ , market price of the product is  $P = 17$ . Based on these numbers we can conclude that firm should  
(A) shut down  
(B) produce more  
(C) charge higher price  
(D) produce less  
(E) charge lower price  
(F) not do anything because profit is maximized
5. A competitive firm maximizes its profit by choosing the level of output such that  
(A)  $ATC$  curve is at the lowest point  
(B) for the last unit produced the increase in total cost is same as market price  
(C) average total cost is same as market price  
(D) total revenue is equal to the total cost  
(E) total revenue is equal to the variable cost

6. A firm employs capital and workers. Due to improvement in technology **output at each level of labor** increased by 20 units. This will have the following impact on the firm's cost curves:
- (A) as long as wage is the same cost curves are the same
  - (B)  $MC$ ,  $AVC$  and  $ATC$  will shift up
  - (C)  $MC$ ,  $AVC$ , and  $ATC$  will shift down
  - (D) only  $AVC$  and  $ATC$  will shift,  $MC$  will stay the same
  - (E)  $AVC$  curve will shift down while  $MC$  will stay the same
7. Sunk costs do not affect economic decisions of firms because
- (A) all firms have the same sunk costs
  - (B) they are not a part of accounting costs
  - (C) they are the same no matter how much output a firm produces
  - (D) they are not counted when economic profit is calculated
  - (E) firms can still earn revenue if they stay open
8. Choose what is true about the 3-stage production process
- (A) total product is increasing only if marginal product is increasing
  - (B) when average product is decreasing marginal product can be increasing or decreasing
  - (C) when marginal product is decreasing total product must be decreasing
  - (D) when average product is decreasing total product must be decreasing
  - (E) when average product is increasing marginal product can be decreasing
9. A competitive firm maximizes profits by choosing output so that  $P = MC$ , however the firm will shut down in short run if at the profit maximizing output
- (A) total revenue is smaller than the sunk cost
  - (B) cost of variable inputs is larger than total revenue
  - (C) total revenue is smaller than total cost
  - (D) price is below  $minATC$  point
  - (E) price is above  $minAVC$  point
10. A firm is using 200 workers who produce 3,000 units of output and at this point the average product of labor is at its maximum point. Choose what **must** occur if the firm hires more workers:
- (A)  $MC$  and  $AVC$  will fall
  - (B)  $MC$  and  $AVC$  will increase
  - (C) if wage is less than 15  $AVC$  will fall, otherwise  $AVC$  will increase
  - (D)  $MC$  will fall,  $AVC$  will increase
  - (E)  $MC$  will increase,  $AVC$  will fall

11. Firm's demand for labor will increase if
- (A) wage falls
  - (B) wage increases
  - (C) price of output increases
  - (D) price of output falls
12. Sally runs her own business, by doing so she loses an opportunity to work as a manager in Bill's company. Then Sally's
- (1) economic cost is smaller than the accounting cost
  - (2) economic cost is greater than the accounting cost
  - (3) economic profit is smaller than accounting profit
  - (4) economic profit is greater than accounting profit
- (A) 1 only
  - (B) 1 and 3
  - (C) 1 and 4
  - (D) 2 and 3
  - (E) 2 and 4
13. Choose what is true about typical cost curves:
- (A) Fixed cost decreases when output increases
  - (B)  $ATC$  and  $AVC$  reach their minimum point at the same level of output
  - (C)  $ATC$  always decreases as firm produces more
  - (D) when  $MC$  is increasing both  $AVC$  and  $ATC$  must be increasing
  - (E) when  $MC$  is increasing  $AVC$  and  $ATC$  can still be falling
14. Firm employs  $K = 15$ , price of capital  $v = 20$ ,  $q = 200$  at this point total cost is 700. Based on this information average variable cost is
- (A) 400
  - (B) 5
  - (C) 3.5
  - (D) 2
  - (E) 1.5
15. At  $q = 200$   $FC = 1,000$   $VC = 500$ ;  
at  $q = 300$   $TC = 2,000$ .  
In the range between 200 and 300 units of output marginal cost is
- (A) 15
  - (B) 10
  - (C) 5
  - (D)  $5/3$
  - (E) 0.5

**II. SHORT ANSWER.** Answer all questions.

1. Since the difference between total cost and variable cost is fixed cost, which is constant, the difference between  $ATC$  and  $AVC$  is constant. Is this true or false? For full marks explain, provide relevant formulas and a correctly labeled diagram. (2 marks)

2. When firm hires  $L = 15$  workers output is  $q = 60$ . When  $L = 20$  output is  $q = 100$ .

(a) (2 marks) Calculate average and marginal product of labor, comment whether they are increasing or decreasing as more labor is hired and show your result on a diagram.

(b) (1 mark) Based on your calculations, what happened to  $MC$  and  $AVC$  as output increased from 60 to 100 units?

3. Provide formulas for rent and profit and 1-2 sentence explanation what they mean. Explain what is more important for a firm to earn rent or profit. Use one diagram that will demonstrate your argument the best. (3 marks)

4. A firm's supply curve in the short run is the same as its marginal cost curve. Is this true or false? explain in 2-3 sentences; provide a diagram. (2 marks)