**CASE STUDY 3**

ECON 402

*Please review chapters 13 (the costs of production) and 14 (The competitive markets) to answer the following question. Submit a pdf or word document with the question numbers labelled properly. Do not submit an image file.*

**Question 1: (30 points)**

Amanda and Kyla operate a small company that produces sweatshirts. Their fixed cost is $2000 per month. They can hire workers for $1000 per worker per month. Their monthly production function for sweatshirts is given in the following table.

|  |  |
| --- | --- |
| **Quantity of Labor (Workers)** | **Quantity of Sweatshirts** |
| 0 | 0 |
| 1 | 300 |
| 2 | 800 |
| 3 | 1200 |
| 4 | 1400 |
| 5 | 1500 |

a. For each quantity of labor, calculate marginal product of labor (MPL), average variable cost (AVC), average fixed cost (AFC), average total cost (ATC) and marginal cost (MC).

b. On one diagram, draw the AVC, ATC and MC

c. What **level of output** is the most efficient production level (or efficient scale of production) for Amanda and Kyla?

**Question 2: (10 points)**

John is thinking of opening a garment store. He estimates that it would cost $270000 per year to rent the location and buy the merchandise. In addition, he would have to quit his $63000 per year day job. John estimates he can sell $315600 worth of garments in a year.

a. What will be the accounting profit and economic profit for John?

b. If you are an economist, should you suggest opening the store? Why?

**Question 3: (10 points)**

Consider the following Long Run Total Cost table.

|  |  |  |  |
| --- | --- | --- | --- |
| **Quantity** | **Long Run Total Costs** | | |
| **Firm A** | **Firm B** | **Firm C** |
| 1 | 60 | 11 | 21 |
| 2 | 70 | 24 | 34 |
| 3 | 80 | 39 | 49 |
| 4 | 90 | 56 | 66 |
| 5 | 100 | 75 | 85 |
| 6 | 110 | 96 | 106 |
| 7 | 120 | 119 | 129 |

a. Assume A, B and C are three different firms. Which firm(s) is(are) operating on economies of scale, or diseconomies of scale (specify both)? (show your long run ATC calculation for each firm in a table form)

b. Assume A, B and C are three different factory sizes you can choose to produce on. Which factory size should you choose to produce on if you are producing 3 units of output? Why?

**Question 4: (20 points)**

In a perfectly competitive market, in the long run, there are free entry and exit of firms. In the lecture slides, I have shown you what will happen when new firms enter the market in the long run when the existing firms are earning positive profit or economic profit. Now, you need to show the mechanism where existing firms in the market are incurring loss and the firms are going to exit the market in the long run. Specifically, draw the market demand and supply curves and also firm’s demand, marginal cost curve and ATC curve to illustrate the mechanism. Mention what is happening to the market price when firms leave the market in the long run. Show the shift of the market supply curve, change in market price due to firms exit decisions clearly**. (Graph only)**

**Question 5: (30 points)**

**A perfectly competitive firm has the following short-run total cost. (Table A)**

|  |  |
| --- | --- |
| **Quantity** | **TC** |
| 0 | $5 |
| 1 | 10 |
| 2 | 13 |
| 3 | 18 |
| 4 | 25 |
| 5 | 34 |
| 6 | 45 |

1. Calculate the firm’s marginal cost (MC), average variable cost (AVC), and average total cost (ATC). The extend the column in the above table. **(Hint: figure out the fixed cost from the first row in the table and then find out the total variable cost by subtracting fixed costs from total costs. In the table also include the fixed costs and variable cost column.)**
2. **The following table shows the market demand schedule: (Table B)**

|  |  |
| --- | --- |
| **Price** | **Quantity Demanded** |
| $12 | 300 |
| 10 | 500 |
| 8 | 800 |
| 6 | 1200 |
| 4 | 1800 |

There are 100 firms in the industry that all have identical cost curves. Find out the industry or market supply. Add a column in the above table for market supply. **(Hint: from table A figure out the minimum AVC because individual firm’s supply curve will be the portion of the MC curve for which P >= min AVC. Then multiple individual quantity level in table A with the number of firms in the market to get the market supply schedule)**

1. Find out the market price, and how much profit will each firm make? **(Hint: remember higher price means higher supply so form the table accordingly. To find out profit of each firm find the greatest quantity at which price equals or exceeds marginal cost from table A)**