Part I: Choose and write the appropriate answer on the answer sheet table provided at the last page (1 point for each question). ***(20 points total)***

1. Which one of the following provides an economic explanation for how different consumers allocate their money income among different goods and services?
   A. Consumers try to get the "most for their money" to maximize their total utility.
   B. Consumers have clear cut preferences and can determine how much marginal utility they get from consuming more units of a product
   C. All consumers face a budget constraint, therefore must make decisions about what they buy based on their limited budget
   D. All
2. Which of the following statements is true of perfectly competitive firms in long run equilibrium?
   A. Price is greater than marginal revenue
   B. Average fixed cost equals marginal cost.
   C. Long run Average Total cost is at a minimum.
   D. Average variable cost is greater than marginal cost.
3. A consumer's budget constraint shows:
   A. The utility that an individual would receive from consuming various combinations of two goods
   B. The combinations of two goods that an individual is able to purchase, given prices and income
   C. How income is influenced by prices of goods
   D. The consumer's affordable consumption bundles that don't cost any more than income
   E. B and D
4. Which of the following is usually a characteristic of a perfectly competitive industry?
   A. Individual firm has significant amount of market power.
   B. The individual demand curve is perfectly elastic.
   C. Any individual firm can increase its production and sales by affecting the price of the good.
   D. Existing firms can bar the entry of new firms.
5. One of the following explains why an Indifference curve is convex to the origin.
   A. Falling Marginal Rate of Substitution (MRS) along the indifference curve
   B. Rising Marginal Rate of Substitution (MRS) along the indifference curve
   C. It is not possible to consume more of two goods at same time because of budget constraints
   D. A & C
6. Greater labor productivity means
   A. Lower output per unit of labor
   B. Higher output per unit of labor
   C. Higher labor cost per unit of output
   D. Lower cost per unit of output
   E. B and D

lying above its intersection with its average total cost curve)

C. It has a supply curve derived from its average total cost curve (that portion of it lying above its intersection with the average variable cost curve)

D. It has a supply curve derived from that part of its marginal cost curve lying above its intersection with the average variable cost curve.

15. A consumer stop buying additional unit of the commodity at equilibrium when:

A. MU starts declining

B. MU becomes zero

C. MU is equal to marginal utility of money ⇒ MU = P

D. Total utility is increasing

16. At present output levels, a firm in a perfectly competitive industry is in the following position: output = 1000 units, market price = $3, total cost = $5000, fixed cost = $2000, marginal cost = $3. To achieve optimum output, the firm should:

A. Reduce output but keep producing.

B. Increase its selling price.

C. Leave output unchanged.

D. Reduce output to zero.

E. Decision is indifferent (additional factor should be considered for decision purpose)

17. Choose a correct statement about costs from the following statements:

A. All cost curves, including AFC curves, are represented by U-shaped curves on a graph.

B. Assuming labor is the only variable input in the short run, the shape of the AVC curve is just a mirror reflection of AP_L on a graph.

C. All costs, except MCs, are represented by U-shaped curves on a graph.

D. AVC curve crosses MC curve when MC attains its minimum.

18. A perfectly competitive firm's demand curve is determined by:

A. Firm demand and firm supply.

B. The price set by the individual firm.

C. Market demand and market supply.

D. The level of the firm's short-run average total cost.

E. The MC curve above average variable cost.

19. If MU_X/P_X exceeds MU_Y/P_Y, then the consumer should

A. Consume more of good X and less of good Y

B. Consume less of good X and more of good Y

C. Consume less of both goods X and Y

D. Not change the consumption levels of X and Y

20. As compare to perfect competitive market, monopoly market structure is considered by economists as socially undesirable. This is due to the facts that monopolies

A. Allocate resources at equilibrium in which price exceed marginal cost which leads to social cost or welfare loss.

B. Discourage innovations since there are no competitors

C. Charges a minimum reasonable price

D. Lead to an efficient use of scarce productive resources

E. A and B

Part II: Short answers (15 points)

1. Briefly describe the difference between the two approaches of utility.**(3 points)**

Cardinal
- constant marginal utility
- money
- utility can be measured
- utility is independent

Ordinal
- non-constant marginal utility
- money
- utility can not be measured it can only be ranked
- utility could be interdependent

2. Suppose a consumer has income of 200 birr per month and he wants to spend all of his income on two goods, X and Y, whose prices are birr 4 and birr 5 respectively. Based on this information answer the following questions.

A) Compute the equation of the budget line $200 = 4X + 5Y$ **(1point)**

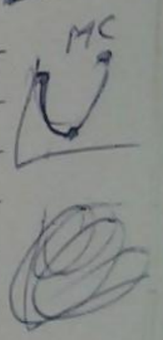
B) Determine the slope of the budget line and interpret the result x-int = 50, y-int = 40

interpretation: x-int: amount of X's consumer can buy if he buys no Y, y-int: amount of Y's he can buy if he doesn't buy X. **(1point)**

C) If the government decides to impose an advalorem tax of 2% on good X and a quantity subsidy of 40 cents on good Y and lump sum subsidy of 20 Birr, then the new budget line equation is $220 = 4.08X + 5.4Y$ **(2points)**

3. Marginal cost curve for a firm operating in the short run is "U" shaped. Explain the reason. **(3 points)**

Total cost curve increases at a decreasing rate initially and increases at a increasing rate.



4. List the characteristics of oligopoly market structure **(3 points)**

- identical or differentiated product
- relatively small number of sellers & many buyers
- need for strategic thinking
- existence of some monopoly power
- firms are price maker

Part III: Work out. Attempt all the following questions as per the instruction given. Show all the necessary steps where needed (15 points)

1. Suppose a consumer's utility function for chocolates(C) and ice cream (I) is U= CI with an income of 120 Birr. And the price of chocolates and ice cream is given as Birr 5 and 10 respectively. Based on the above information, answer the following questions.
   A. Compute consumer's consumption amount of C and I if he/ she consumes at equilibrium point **(2 points).**

at equilibrium

$$\frac{MU_C}{P_C} = \frac{MU_I}{P_I}$$

$$MU_C = \frac{\partial U}{\partial C} = \frac{\partial (CI)}{\partial C} = I$$

$$MU_I = \frac{\partial U}{\partial I} = \frac{\partial (CI)}{\partial I} = C$$

Then, $\frac{I}{5} = \frac{C}{10} \Rightarrow C = 2I$ (*)

from budget constraint equation

$120 = 5C + 10I$ from (*)

$\Rightarrow 120 = 5(2I) + 10I \Rightarrow 120 = 20I$

$\Rightarrow I = 6$

Then $C = 2I$

$\Rightarrow C = 2(6)$

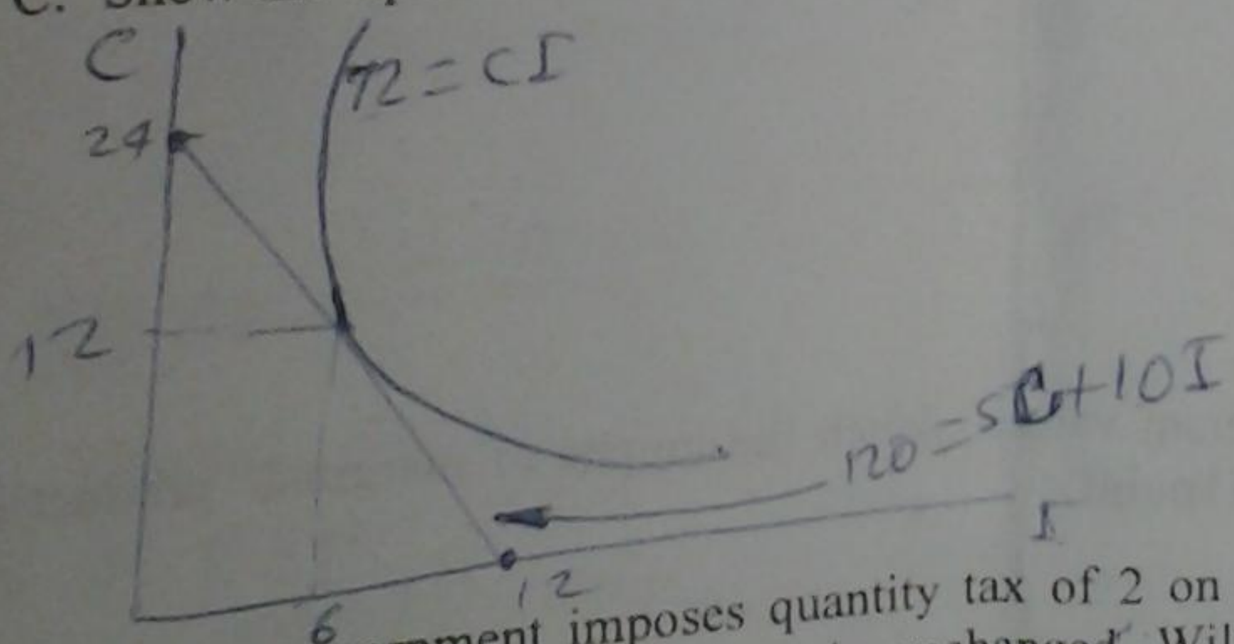
$C = 12$

B. Calculate consumer's maximum utility level at equilibrium point(**1 point)**

$U = CI$

$= (12)(6) = 72$ utils

C. Show the equilibrium condition results graphically **(1 point).**



D. If the government imposes quantity tax of 2 on both Chocolate and Ice cream while consumer's income level remain unchanged, Will the introduction of tax increases or decreases consumer's utility? Why? **((1 point).**

The consumer's utility will decrease because tax will make 'C' and 'I' more expensive for the consumers. As a result, the consumers budget equation will shift inwards which means it will be tangent to indifference curve closer to the origin which represents lower utility.

No 05

2. Suppose a firm is operating with the following production function in the short –run while its fixed input is capital (K=1):

$\mathbf{Q = -2L^3 + 30L^2}$, Where Q is the level of output and L is the amount of the variable input

A. Derive the functions of Average product of labor and Marginal product of labor (2 **points)**

$\frac{Q}{L} = AP_L = \frac{-2L^3+30L^2}{L}$

$= -2L^2+30L$

$MP_L = \frac{dQ}{dL} = -6L^2+60L$

B. Find the output level that maximizes marginal product and average product of labour **(2 points)**

to maximize MP_L:

$\frac{dMP_L}{dL} = 0$

$\Rightarrow \frac{d(-6L^2+60L)}{dL} = 0$

$\Rightarrow -12L+60 = 0$

$\Rightarrow 12L = 60$

$\Rightarrow L = 5$

output level:

$Q = -2(5)^3+30(5)^2$

to maximize AP_L:

$\frac{dAP_L}{dL} = 0 \Rightarrow \frac{d(-2L^2+30L)}{dL} = 0$

$\Rightarrow -4L+30 = 0$

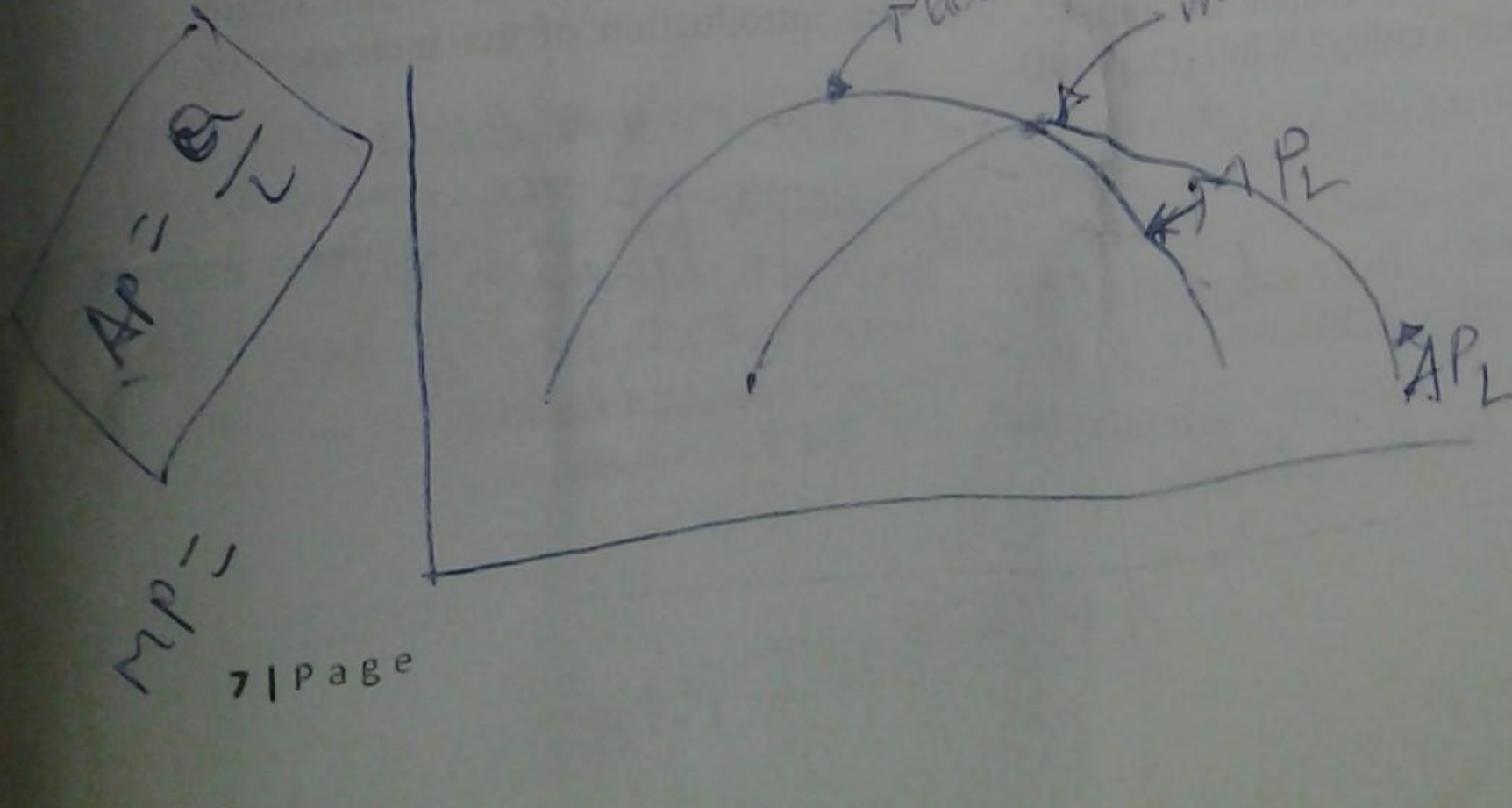
$\Rightarrow L = \frac{30}{4} = \frac{15}{2} = 7.5$

output level:

$Q = -2(7.5)^3+30(7.5)^2$

(5)

C. By indicating their maximum values, sketch the graphs of marginal product and average product of labour **(1point)**



3. Assume a farmer engaging in fishing activity under perfect competition market faces short run cost functions as $TC = 100 + 20Q - 3Q^2 + Q^3$ and Average revenue of the farmer is given as Birr 20 . Having this information, answer the following questions

A. Determine the optimal level of output and price in the short run (2points)

at optimum

$MC = AR$

$MC = \frac{dTC}{dQ} = \frac{d}{dQ}(100 + 20Q - 3Q^2 + Q^3)$

$= 20 - 6Q + 3Q^2$

since $MC = AC$:

$20 - 6Q + 3Q^2 = 20$

$\Rightarrow 3Q^2 - 6Q = 0 \Rightarrow 3Q(Q-2) = 0$

$\Rightarrow Q = 0$ or $Q = 2$

from second order condition at optimum slope of MC > slope of AR

$\frac{dMC}{dQ} > \frac{dAR}{dQ} \Rightarrow -6 + 6Q > 0$

at $Q = 0$

$-6 + 6(0) > 0$ is false

at $Q = 2$

$-6 + 6(2) > 0 \Rightarrow 6 > 0$ true then

Thus, 6 is the optimal level of output.

B. Calculate the economic profit (loss) the farmer will obtain (incur) (1point).

→ profit/loss

$\pi = Q(P - AC)$

$\pi = QP - TC$

$\pi = 6 \times P - [100 + 20(6) + 3(6)^2 + (6)^3]$

but for pure competition $P = AR = 20$ $\Rightarrow \pi = 6 \times 20 - [100 + 20(6) + 3(6)^2 + (6)^3]$

C. What will be the minimum price level the farmer gets to continue in fishing production? (2 points)

→ shutdown point

at shut down point:

$AVC = AR$

But $AVC = \frac{TVC}{Q}$

$\Rightarrow TVC =$ Total cost − TFC

TFC = Total cost at output 0

$\Rightarrow TFC = 100 + 20(0) - 3(0)^2 + (0)^3 = 100$

$TVC = 100 + 20Q - 3Q^2 + Q^3 - 100$

$= 20Q - 3Q^2 + Q^3$

$AVC = \frac{20Q - 3Q^2 + Q^3}{Q} = 20 - 3Q + Q^2$

$20 - 3Q + Q^2 = 20 \Rightarrow Q^2 - 3Q = 0$

$\Rightarrow Q(Q-3) = 0$

$\Rightarrow Q = 0$ or $Q = 3$

since at $Q = 0$ farmer can't producing anything $Q = 3$ is shutdown point.

Part I: Multiple choices answer sheet

1.	6.	11.	16.
2.	7.	12.	17.
3.	8.	13.	18.
4.	9.	14.	19.
5.	10.	15.	20.

7. When optimum of the firm in production in the long-run is attained, which one of the following statement(s) is/ are correct?
   A. Marginal rate of technical rate of substitution is equal to the ratio of input prices.
   B. An isocost line is tangent to isoquant curve.
   C. Firm is using the least cost combination of inputs providing the maximum achievable output level.
   D. All
8. Suppose a firm produce 180 and 200 unit output when it employs 3 and 4 labors respectively. Wage of labour is given as 50 Birr per day. The value of average variable cost of production when 4 labours are used and marginal cost for the firm respectively is:
   A. 3 and 4 B. 2.5 And 1 C. 1 and 2.5 D. 4 and 1
9. The law of variable proportion states that
   A. As variable input increases, total product decreases.
   B. As variable input increases average product decrease
   C. As variable input increases, marginal product decreases.
   D. Production exhibits increasing, constant and decreasing returns to scale.

10. In the long run, compared with a perfectly competitive firm, a monopolistically competitive firm with the same costs will have
   A. A higher price and higher output
   B. A higher price and lower output
   C. A lower price and higher output
   D. A lower price and lower output
   E. The same price and lower output
11. Which one of the following is true about the second stage of production?
   A. Total product is falling
   B. Average product is greater than marginal product
   C. It is the inefficient region of production
   D. There is proper combination of fixed and variable input
   E. B and D
12. When a firm increases its input of labor and capital by 40 %, its output changes from 120 to 160 kilograms, the returns to scale of this firm is _____
   A) Increasing B) Decreasing C) Constant D) Indeterminate
13. A firm producing 7 units of output has an average total cost of Birr 15 and must pay Birr 35 for the total fixed costs whether it produces or not. The value of average variable cost of production for the firm is:
   A. Birr 20
   B. Birr 5
   C. Birr 30
   D. Birr 10
14. If the firm is operating under pure monopoly market structure, which one of the following is true?
   A. It does not have a supply curve because there is not necessary connection between the price of its product and its own output
   B. It has a supply curve derived from its average variable cost curve (that portion of it

Part I. Choose the letter of the correct choice and write the capital letter on the answer sheet found at the end of the questions on this section. (30%; 1.5 pts each)

1. A positive Marginal Utility is best described by one of the following:
   A. with consumption of an additional unit of a commodity, Total Utility increases.
   B. with consumption of an additional unit of a commodity, Total Utility decreases.
   C. with consumption of an additional unit of a commoaity, Total Utility remains the same.
   D. with consumption of an additional unit of a commodity, Total Utility is maximized.

2. Indifference curves are always convex to the origin. What does this imply?
   A. The two goods are imperfect substitutes for each other.
   B. The marginal Rate of Substitution (MRS) between the two goods increases as a consumer moves down along the indifference curve.
   C. The two goods are perfect substitutes for each other.
   D. The two goods are complementary.

3. A consumer stop purchasing the additional unit of the commodity when:
   A. Marginal Utility starts declining
   B. Marginal Utility becomes zero
   C. Total Utility is increasing
   D. Marginal Utility is declining and becomes negative.

4. Bilen is a rational consumer and spends all of her income on consuming orange and banana. Suppose the last unit of orange consumed increased her total utility from 60 utils to 68 utils and the last unit of banana consumed increased her total utility from 25 utils to 29 utils. If the price of a unit of orange is 1Birr, what is the price of a unit of banana at equilibrium?
   A. 0.5 Birr
   B. 1.5 Birr
   C. 1 Birr
   D. 2 Birr

5. Identify a statement which best describes the economic intuition behind the Law of Diminishing Marginal Utility (LDMU).
   A. as an individual increases consumption of a given product within a set period of time, the utility gained from consumption eventually declines.
   B. the extra satisfaction(MU) that a consumer derives rises as he/she consumes more and more of the product in a given period of time.
   C. as an individual increases consumption of a given product within a set period of time, the marginal utility gained from consumption eventually declines.
   D. All of the above best describes the LDMU.

Part II. Short Note Writing (10%)

Write short notes on any two of the following questions.

1. Graphically and verbally explain how does a producer in a perfectively competitive market know, in general, whether or not its business will be profitable?
2. Cost of Production refers to the total money expenses (both explicit and implicit) incurred by the producer in producing a particular quantity of output. Explain the basic difference between explicit and implicit costs. Support your explanations with examples.
3. Consider a consumer who consumes only two goods Good X and Good Y and encounters limited income. Holding other things constant, graphically and verbally discuss the effects of the following events on the budget line of this consumer.
   - 3.1 Economic growth that boosts the level of disposable income
   - 3.2 Inflation that consistently increases the price of both goods: Good X and Good Y.
4. Distinguish between fixed and variable inputs. Provide appropriate examples to support your explanations.

Choice 1

Choice 2

Hi! I am Dagmawi Abate. Subscribe/Follow/Join me in Learning Software Engineering (SE).

YouTube: https://www.youtube.com/c/DagmawiAbate

Twitter: https://twitter.com/DagmawiAbate

Telegram: https://t.me/SEdagmawiabate