

BCH 405: Metabolic Regulations(2 units)

Time allowed:2hrs

INSTRUCTIONS: Attempt any four(4) questions in your answer booklet

1. Define the following terms citing an example in each case:

- a. Negative control → lac operon
- b. Positive control → Ara binase operon
- c. End product repression → ~~tryptophan~~ vitamin, A-A₁
- d. Catabolite repression → histidine

2. Briefly summarize the reactions of the TCA cycle identifying the enzyme involved at each step.

b. Concisely state how the TCA cycle intermediates are being replenished in mammals during the metabolism of carbohydrates.

3. Describe the regulatory pattern that occurs in the bacterial enzyme system that catalyzes the conversion of L-threonine into L-isoleucine.

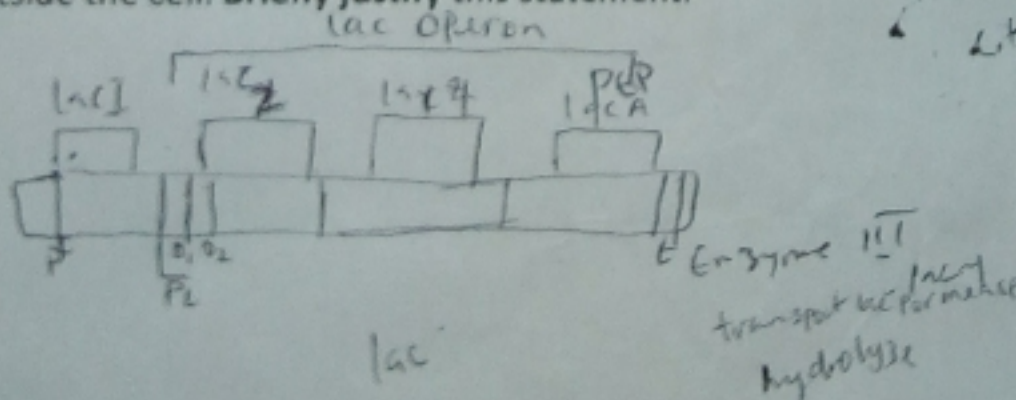
b. State the roles of functional genes in metabolism. → repressor gene
operator gene
promoter

4. The degradation of amino acids resulting from the hydrolysis of protein produces a number of intermediates. Highlight these intermediates and briefly describe their fate in the TCA cycle.

b. Mention the enzymes involved in the levels of enzymatic control of glycolysis.

5. With the aid of a diagram only, describe the organization of the gene that encodes proteins required to metabolize lactose

b. In E.coli, the concentration of cAMP inside the cell is controlled by the concentration of glucose outside the cell. Briefly justify this statement.



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