MCM Practice Questions: Lecture Day 2

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Lecture 6: Cell Homeostasis

1) A couple of hours after you ate a breakfast of yoghurt with oats, your small intestine starts digesting it. Oats are a complex carbohydrate that needs to broken down into simpler parts before it can be absorbed. What kind of acid hydrolase will most likely be used in this situation?

(A) Protease

(B) Glycosidase

(C) Lipase

(D) Nuclease

2) A patient presents to the ED with uncontrolled hyperglycemia. The patient has a medical history of diabetes and nephropathy, and has a surgical history of bilateral cataract surgery. What is the most likely pathophysiological reason for these complications?

(A) Excess Mannitol

(B) Excess Sorbitol

(C) Decreased Mannitol

(D) Decreased Sorbitol

3) What is one buffer system cells use to regulate cytoplasmic pH?

(A) Phosphate Buffer system

(B) Bicarbonate Buffer system

(C) Hemoglobin Buffer system

(D) Ammonia Buffer system

4) Heme is an important biological compound that is necessary to transport oxygen and CO2 around your body. However, too much free heme circulating in your body can be toxic. In order to regulate this, when there are adequate levels of heme, the rate limiting step of heme synthesis is inhibited. This is an example of what kind of regulation?

(A) Positive Feedback

(B) Negative Feedback

(C) Constructive Feedback

(D) Irreversible Inhibition

5) A protein in a cell has reached the end of its life. What post-translational modification is added to the protein to make it a target for degradation?

(A) Chitin

(B) Methylation

(C) Acetylation

(D) Ubiquination

6) A 10- month old infant is brought to her pediatrician upon concern from her parents because she was not meeting developmental milestones. Genetic testing reveals that the infant has a defective protein called UBE3A which is preventing the degradation of proteins in the infants hippocampus and cerebellum. What is the name of this disease?

(A) Von Hippel-Lindau Syndrome

(B) Down Syndrome

(C) Kleinfelter Syndrome

(D) Angleman Syndrome