

Printed Name _____

MIC 226 FALL 97 DR BLINKOVA EXAM3 MULTIPLE CHOICE

Answers. Answer the multiple choice questions on the answer sheet. Write answers to the other questions on the test. Turn in both answer sheet and test. Multiple choice, 3 pts each; others as indicated.

Read the questions carefully. For the multiple choice questions, choose only the best answer. Written answers which are correct in content but not relevant to the question cannot be scored correct.

Understanding the questions is part of the exam. Therefore, no questions about the exam will be answered, unless some of the exam questions are ambiguous, in which case, the entire class will be interrupted and the same explanation made to everyone. If you think that a question is ambiguous, inform the TA or instructor.

Several questions ask you to analyze lecture material and formulate an answer, rather than just to repeat material from memory.

1. Precursors of RNA include
 - a. Adenosine triphosphate
 - b. Deoxyuridine triphosphate
 - c. Guanosine monophosphate
 - d. Nicotinamide adenine dinucleotide

2. The RNA polymerase core requires the sigma subunit
 - a. to respond to transcriptional control proteins
 - b. to recognize and bind promoters
 - c. to terminate transcription at the 3' end of the messenger
 - d. all the above

3. Transfer RNA molecules
 - a. function in transcription
 - b. carry acitvated amino acids as anhydrides
 - c. act as adaptors between codons and amino acids
 - d. all the above

4. The site for negative control of an operon is the
 - a. promoter
 - b. operator
 - c. brake (do not mark this answer)
 - d. origin

5. A hypothetical catabolic operon, the products of which function in catabolizing a certain food, can be negatively controlled by a repressor. It has no requirement for positive control by an activator protein. What must happen for that operon to be maximally expressed?
 - a. the repressor must be activated
 - b. the inducer must inactivate the repressor
 - c. the repressor must bind the operator
 - d. RNA polymerase must bind the operator

6. For a hypothetical operon subject to both positive control by cyclic AMP and Catabolite Activator Protein [CAP] and negative control by its repressor, what conditions must exist if the operon is to change from maximum transcription to least transcription?
 - a. the repressor must be active
 - b. the Catabolite Activator Protein must be activated by cyclic AMP
 - c. RNA polymerase must bind the promoter
 - d. all of the above

7. The positive control mechanism of the lactose operon
 - a. controls the operon even when the negative control system is functional
 - b. allows cells to use a more efficient carbon/energy source first
 - c. inactivates the repressor, which was synthesized in the active form
 - d. all the above

8. Repression of the tryptophan operon requires
 - a. a co-repressor to activate the repressor
 - b. RNA polymerase to polymerize the mRNA
 - c. an inducer to inactivate the repressor
 - d. none of the above

9. Mutations

- a. change the sequence of nucleotides within a chromosome
- b. change the genotype of an organism
- c. might change the phenotype of an organism
- d. all the above

10. If a nucleotide pair substitution occurs in the β -galactosidase gene of the lactose operon, you would expect that the mutant

- a. might be unable to synthesize the product of that gene
- b. might be unable to regulate expression of the lactose operon
- c. might synthesize an inactive β -galactosidase
- d. might not be able to synthesize lactose