MIC 226 EXAM III FALL 95

PRINT NAME_____

READ THE QUESTIONS CAREFULLY

1. (10 pts) Name five enzymes or other proteins you would expect a phage or animal virus chromosome to encode. This question does not mean that the protein must be encoded by both phages and animal viruses. Either/or is accceptable.

A. _____

B. _____

C. _____

D. _____

E. _____

2. (16 pts) List and briefly describe any four of the major steps or biochemical events required for prophage formation. What enzymes, other proteins, nucleic acids, or specific sites within nucleic acids are involved in each step? You may start with lambda, which is a temperate phage, and susceptible bacterial host cells.

A. _____

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B. _____

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C. _____

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D. _____

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3. (22 pts) Compare and contrast bacterial transformation by chromosomal fragments and conjugation which involves transfer of chromosomal DNA fragments (that is, conjugation involving HFR donors; HFR donors are those with the Fertility Factor integrated in the chromosome). Use complete sentences. In both A and B below, transformation and conjugation refer to these two cases specifically and not to other examples of transformation or conjugation.

A. List two ways that transformation and conjugation are similar:

i. _____

_____

ii. _____

_____

B. List four ways that transformation and conjugation are dissimilar. Tell how they are different in each transformation and conjugation.

i. _____

_____

_____

ii. _____

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iii. _____

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iv. _____

_____

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4. (16 pts) Assume that you need to make a molecular clone of some gene from a given organiam, such as *Mycobacterium*. Name four things (chemicals, enzymes, proteins, bacterial cells, biochemicals), other than *Mycobacterium* cells, that you would need for this procedure. Tell why each is necessry?

A. _____ _____

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B. _____ _____

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C. _____ _____

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D. _____ _____

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5. (20 pts) List and briefly describe any five of the major steps in growth of a retrovirus within a single infected host cell. Your definition of "major" is acceptable so long as the steps are separate and are not redundant. You may start with viruses and susceptible host cells. Include the enzymes, other proteins, nucleic acids, nucleic acid sites, or other factors involved.

A. _____

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Question 5 cont'd NAME PRINT_____

B. _____

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C. _____

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D. _____

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E. _____

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6. (16 pts) Briefly describe the following . In the case of enzymes, you may tell what reaction they catalyze.

A. Specialized transduction _____

_____

B. Bacterial DNA modification enzyme _____

_____

C. Reverse transcriptase _____

_____

D. Generalized transducing particle _____

_____

E. Dominance (genetic) _____

_____