VIRUSES

1. Describe the structure of a virus by completing the following chart.

<table>
<thead>
<tr>
<th>Viral Part</th>
<th>Description of Part</th>
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2. Some viruses have an envelope that surrounds the capsid. Complete the following chart providing information regarding viral envelopes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Function</th>
<th>Origin</th>
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3. Match the structure listed below with the correct letter from the diagram.

_____ capsid
_____ genome
_____ tailpiece
_____ tail fibers

4. Most viruses are obligate intracellular parasites. Describe what this means.

_________________________________________________________________
_________________________________________________________________
5. Listed below are the steps in the lytic replication cycle of viruses. Put the steps in the correct order.

______ Phage genome directs host cell to produce phage components (DNA & capsids)
______ Self assembly of phage
______ Bacteriophage attaches to host cell
______ Host cell lyses releasing phage particles
______ Hydrolytic enzymes destroy host cell’s DNA
______ Phage contracts and injects DNA into host cell

6. Shown below are diagrams representing the stages in viral reproduction. Match the diagram with the correct description.

______ Self assembly of viral parts

______ Viral genome directs host cell to produce new viral parts

______ Virus contacts injecting genome into host cell; hydrolytic enzymes destroy host genome

______ Virus attaches to host cell

______ Cell lysis; new viruses released
7. How do bacteria protect themselves against viral infection?
   ____________________________________________________________
   ____________________________________________________________

8. How are the lytic and the lysogenic cycles different?
   ____________________________________________________________
   ____________________________________________________________

9. What is a prophage?
   ____________________________________________________________

10. Examine the diagram below.

    Process 1
    1  3  4  5
    2

    Process 2
    6  7  8  9  10

    a. Which process represents lytic reproduction? ________________
    b. Which process represents lysogenic reproduction? ________________
c. Match the description with the correct number from the diagram:

1. Incorporation of viral genome into host cell genome
2. Replication of lysogenic cell
3. Attachment of the virus
4. Insertion of the viral genome into host cell
5. Self-assembly of viral parts
6. Cell lysis; release of new viruses
7. Replication of viral genome and capsid

11. Define:

<table>
<thead>
<tr>
<th>Lysogenic Cell</th>
<th>Lysogenic Conversion</th>
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12. List three diseases that are caused by bacteria that have undergone lysogenic conversion.

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

What causes the pathogenicity of these diseases?
__________________________________________________________________________________
__________________________________________________________________________________

13. How is the replication of the herpes virus different from that of other viruses?
__________________________________________________________________________________
__________________________________________________________________________________

__________________________________________________________________________________
15. Listed below are the steps in the replication of viruses with envelopes. Match the description with the correct step.

______ Glycoprotein spikes attaché to receptor sites on host cell membrane

______ Envelope fuses with host cell membrane; entire virus enters cytoplasm of host cell

______ New capsids surround viral genomes; new viruses bud off cell surface; virus surrounded with modified cell membrane

______ Cellular enzymes remove protein capsid from around viral DNA

______ Viral RNA polymerase replicates viral RNA; viral mRNA transcribed and translated

A. Assembly & Release
B. Attachment
C. Entry
D. Viral RNA & Protein Synthesis
E. Uncoating

16. How is the replication of retroviruses different from that of other viruses?

________________________________________________________________________
________________________________________________________________________

17. What is the function of reverse transcriptase?

________________________________________________________________________
________________________________________________________________________

18. What effect could the expression of proviral genes have on the host cell?

________________________________________________________________________
________________________________________________________________________
19. Listed below are the steps in the replication of a retrovirus. Put the steps in the correct order.

_____ Attachment of virus

_____ Reverse transcription -- Viral RNA used as template to produce minus strand of DNA

_____ Uncoating of single-stranded RNA genome

_____ Proviral DNA transcribed into mRNA; mRNA translated into proteins and may become genome for next generation of viruses.

_____ Capsid proteins enzymatically removed

_____ Virus enters host cell cytoplasm

_____ Integration -- newly produced viral DNA enters nucleus, inserts into host DNA, & becomes provirus

20. List the ways viruses can cause disease symptoms.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

21. What medical weapons are used to fight viral infections?

________________________________________________________________________

22. Define oncogene.________________________________________________________________________

________________________________________________________________________