Chapter 2 Test Bank

MULTIPLE CHOICE

1. Which of the following is NOT a characteristic of viruses?
   a) They are small in size
   b) They undergo *de novo* replication
   *c) A single virus can have a genome composed of both DNA and RNA
   d)Some viruses can undergo reverse transcription

2. Which of the following terms refers to a virus's protective protein shell?
   a) its envelope
   *b) its capsid
   c) its genome
   d) itscapsomere
   e) its matrix

3. Which of the following terms refers to the exterior phospholipid membrane possessed by some viruses?
   *a) its envelope
   b) its capsid
   c) its genome
   d) itscapsomere
   e) its matrix

4. What is the term for the viral protein that facilitates the docking of the virus to the host cell?
   a) cell surface receptor
   b) capsomere
   c) virus docking protein
   *d) virus attachment protein
   e) integrin

5. The *amplitude*of a helical virus refers to the:
   a) Total helix length
   b) Height of one turn of the helix
   c) Number of protein subunits per turn
   *d) Diameter of the helix

6. The *pitch* of a helical virus refers to the:
   a) Total helix length
   *b) Height of one turn of the helix
   c) Number of protein subunits per turn
   d) Diameter of the helix

7. Vesicular stomatitis virus is a helical virus with 4.5 capsid subunits per turn of the helix. Each subunit's rise is 1.5nm. What is the pitch of the virus?
   a) 3nm
   *b) 6.75nm
   c) $3x10^3$ nm
   d) 6nm

8. An icosahedron possesses _____ axes of symmetry.
   a) 2-4-5
   *b) 2-3-5
   c) 2-3-4
   d) 1-3-5
   e) 1-3-4

9. An icosahedral capsid is composed of _____ sides, each in the shape of a(n) _____.
   a) 12; pentagon
   b) 20; right triangle
   c) 12; right triangle
   d) 12; equilateral triangle
   *e) 20; equilateral triangle

10. An icosahedral virus binds a receptor on the surface of a cell at its 5-fold axis. Which term describes the part of the icosahedron that will make contact with the receptor?
   a)a face
   b) a edge
   *c) a vertex
   d)a structural unit
   e) a center

11. Which of the following triangulation numbers describes an icosahedral virus that has 4 structural units per face?
   a) T=1/4
   b) T=1
   c) T=12
   d) T=16

*e) T=4

12. Which of the following viruses does NOT have icosahedral symmetry?
*a) Ebola virus
b) Rhinovirus
c) Herpesviruses
d) Human papillomavirus

13. Bacteriophages containing icosahedral heads attached to helical tails have this type of capsid structure:
a) Modified
b) Icosahelical
*c) Complex
d) Helicosahedron
e) It's Complicated...

14. Which of the following taxonomical groups is NOT used to name viruses?
a) Species
b) Genus
*c) Class
d) Family
e) Order

15. *Arenaviridae* is an example of the following taxonomical group:
a) Species
b) Genus
c) Class
d) Family
e) Order

16. Which of the following Orders of the Virosphere does NOT contain human-infecting viruses?
*a) *Caudovirales*
b)*Picornavirales*
c) *Herpesvirales*
d) *Mononegavirales*

TRUE OR FALSE

17. The nucleocapsid refers to the capsid and its enclosed genome. *True*

18. Molecules that readily associate with water are hydrophilic. *True*

19. All icosahedral viruses are enveloped. *False*

20. The International Committee on Taxonomy of Viruses is the body that categorizes viruses and determines their taxonomy. *True*

21. David Baltimore is in charge of categorizing viruses and determining their taxonomy. *False*

22. Viruses fall under the Eukarya Domain within the tree of life. *False*

SHORT ANSWER/ESSAY

23. Why are viruses considered obligate intracellular pathogens?

24. How does viral replication differ from cell replication?

25. What is the function of the capsid? Why must viruses repeat the same capsid protein subunits over and over again, rather than having hundreds of different capsid proteins?

26. Explain what 2-3-5 symmetry is, pertaining to an icosahedron.

27. How many 2-fold axes of symmetry are found in one icosahedron? How about the number of 3- or 5-fold axes? How many faces, edges, and vertices are found in an icosahedron?

28. What is a structural unit? In a T=3 virus that has 3 subunits per structural unit, how many total subunits form the capsid?

29. List the seven groups of the Baltimore classification system.

30. What taxa are used to classify viruses? How does this differ from the classification of a living organism?

31. What viral properties are used to classify viruses?

32. How are viruses named? Provide at least 4 examples of viral names and describe the origin of their names.