1. Circle the statement(s) which is(are) incorrect: All viruses are the same because: (1)
   1. All viruses package their genome into an infectious particle containing host lipids.
   2. All viral genomes contain all of the information necessary for the virus to carry out its complete replication cycle.
   3. All Viruses must be stably maintained in a host population.

2. Tobacco mosaic virus has a _________ capsid symmetry (1)

3. How was it made clear that virus particles did not replicate like Bacteria (and Eukaryotic cells) by binary fission? (1)
   1. Plaque tests
   2. Electron microscopy
   3. One step growth curves
   4. Fluorescent Foci assays

4. How are poliovirus (T = 1) coat protein subunits (VP1, VP2 and VP3) different? (1)
   1. They are made up of different secondary structure motifs.
   2. They have different loops between secondary structures
   3. They interact differently to form hexamers and pentamers
   4. They have completely different tertiary structures
   5. They have very different primary structures

5. How many nucleocapsid proteins does the 200nm diameter T = 16 herpes simplex A virus have? (1)
   1. 1
   2. 2
   3. 3
   4. 5
   5. 10

6. You have a virus which causes plaques on lawns of host cells with “two hit” kinetics. Therefore, you want to know how many of your cells are infected with two or more virus particles when you mix 10,000 virus particles (assume that all are infectious) with 1,000 cells. How many cells have 2 particles or more in them (show your work). (5)