Biology 255 Homework #2

Choose the best answer from among those given

2.1 Procaryotes:
a) have no nucleus and thus no DNA
b) include the bacteria, cyanobacteria, and protozoans
c) are able to live only on inorganic energy sources
d) have no Golgi
e) choose this answer if none of the above is correct

2.2 All the DNA in a eucaryotic cell is contained in the nucleus?
a) true b) false

2.3 All eucaryotic organisms have the same number of chromosomes in their cells?
a) true b) false

2.4 Which of the following is a member of the Archaebacteria?
a) E. coli b) thermophiles c) yeast cells d) Hela cells
e) choose this answer if none of the above is correct

2.5 Which of the following reactions is likely to be carried out by a ribozyme?
a) DNA synthesis b) protein hydrolysis c) RNA splicing d) polysaccharides hydrolysis
e) none of these is correct

2.6 According to the current paradigm, the minimum requirement for life to have originated on Earth was the formation of ?
a) a molecule that could provide a template for the production of a complementary molecule
b) a double-stranded DNA helix
c) a molecule that could direct protein synthesis
d) a molecule that could catalyze its own replication
e) none of these is correct

2.7 Experiments that simulate conditions on the early Earth have shown that small organic molecules, as amino acids and sugars, can be synthesized without protein catalysts (enzymes)? a) true b) false

2.8 A replicase system would contain which of the following molecules?
a) DNA b) carbohydrates c) viruses d) ribozymes and deoxyzymes
e) none of these is correct

Thought question?
You are a scientist living in the 1890's and are studying a disease of tobacco crops, which stunts their growth and mottles their leaves. You have learned that the sap from a diseased plant, when added to a healthy plant, transmits the disease to the previously health plant. You have examined

the sap through the best microscopes of the day and see no evidence of bacteria. You force the sap through a series of filters, whose pores are small enough to prevent the passage of the smallest known bacteria of the 1890's. Yet, the sap fluid is still able to transmit the disease. You conclude that the infectious agent is an unusually small bacterium. What kinds of experiments would you perform today to test this hypothesis?

Answers to homework 2

2: 1 (d), 2(b), 3(b), 4(b), 5(c), 6(d), 7(a), 8(d) and

9) You could examine the filtered sap solution under an electron microscope to determine if there was a cellular agent present, i.e., very small bacteria, or is a non-cellular agent as a virus was present.

You could also try to cell culture the filtrate. If it was bacterial, you might be able to grow them in the absence of other cells, but if it were viral, you might have to culture it on host cells.

You could chemically analyze the filtrate for a genome, DNA or RNA and measure the amount of genetic material present. If the infective agent was cellular, it would be expected to have a larger genome than if it were viral.