BSC1010, Take Home Exam 1, due next class period. (T 5:30) Name _____

Put your answers on this exam. When finished, transfer your answers to a *Scantron* answer sheet using a No. 2 pencil.

Use the following for questions 1-4.

a. Gravity
b. Catastrophic gravitational collapse of a sun and supernova explosion
c. Big Bang
d. Nuclear radiation

1. The force that balances the outward push of the Sun's continuous nuclear explosion?
2. The event that brought the universe and all its' energy into existence?
3. The event that fusses the elements on a dying sun into all the elements on the periodic chart?
4. Results from a sun running out of hydrogen to fuel its fusion reactions?

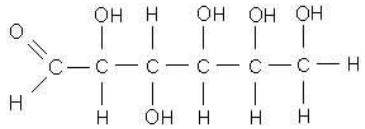
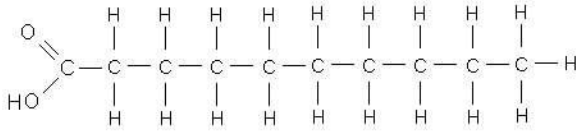
5. What best determines if a planet orbiting a sun is likely to have life on it?
    a. The planet has H, C, O and N as elements.
    b. The planet is the right distance from its sun to have liquid water.
    c. The planet is undergoing a catastrophic gravitational collapse.
    d. The water on the planet has a high Specific Heat.
    e. The planet has plenty of protons, neutrons and electrons.

6. If you could take a hydrogen atom (has one proton) and a helium atom (has 2 protons) and could place them on the surface of the sun, the gravity would fuse the nuclei of the two atoms together to create an atom of which element?
    a. Carbon (C)
    b. Nitrogen (N)
    c. Oxygen (O)
    d. Lithium (Li)
    e. Phosphorus (P)

7. The fusion reaction described above results in the loss of some of the mass of the protons and neutrons being fused together. The lost mass is converted into energy that races away at the speed of light. What do we call this energy?
    a. Nuclear radiation
    b. Carbon
    c. Sunlight
    d. Electrons
    e. a and c

8. Energy from the Sun is converted into calories in plant tissue. The calories in plant tissue can be used by the plant to grow and reproduce, or it can be eaten by an animal and converted into animal tissues or utilized to supply energy for the animal. The <u>process</u> that converts the sunlight into calories for use by organisms in an ecosystems is called…
    a. Nuclear fusion
    b. Digestion
    c. Dissolution
    d. Gravity
    e. Photosynthesis

Use the following for questions 9-12.

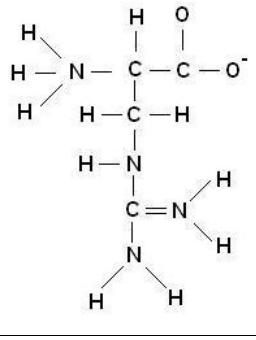
A.	B.
	

9. Which molecule above has the chemical formula $C_{10}H_{20}O_2$?

10. Which molecule contains the most oxygen (O) per pound?

11. If the amount of oxygen in a molecule determines how well that molecule will dissolve in water, then which molecule would be the most soluble in water?

12. If the C-H bond contains double the energy of a C-OH bond, then which molecule will contain the most calories per pound?

13. What element is present in the molecule at right that is not present in the two molecules above?	
a. C b. H c. O d. P e. N	

Use the following for 14-16.

a. DNA
b. Starch
c. Protein

14. Sugars hooked together in long chains form
15. Amino acids hooked together in long chains form
16. Bases (ATGC) hooked together in two long chains wrapped around each other form

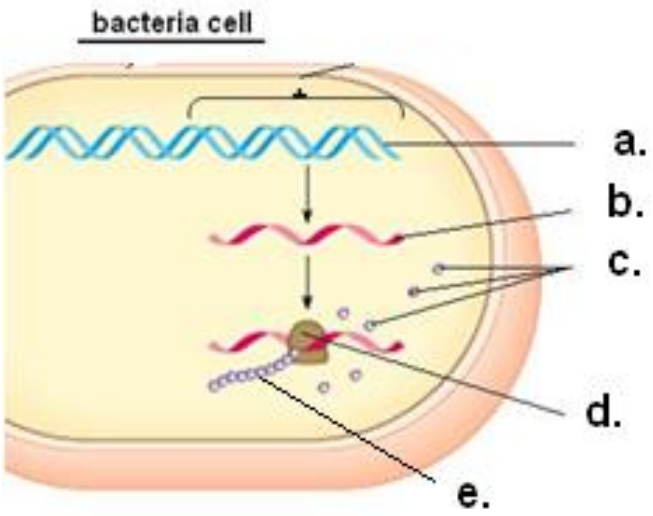
17. If the DNA code is ATG CCC TTT what is the RNA copy of this code?
    a. TAC GGG AAA
    b. UAC GGG UUU
    c. UAC GGG AAA

Match the labels at right with the molecules below.

18. RNA
19. Amino acids
20. DNA
21. Ribosome
22. Protein

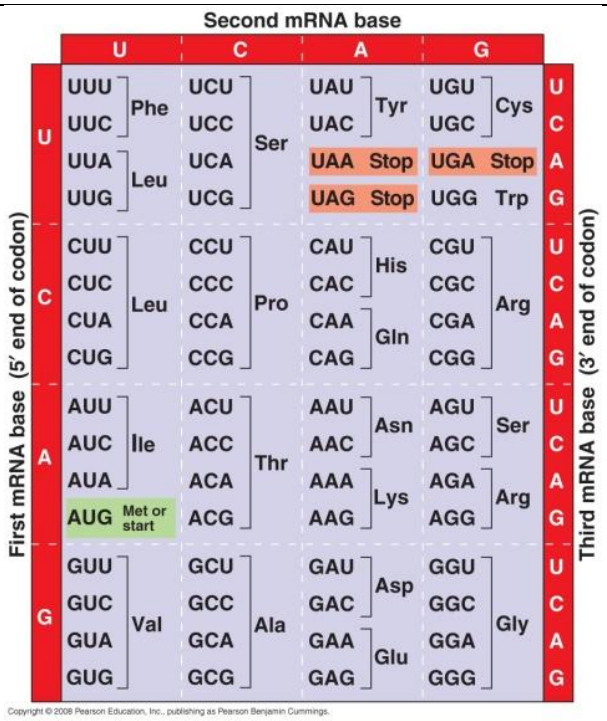
23. Which molecule contains U or Uracil?

24. Which molecule could be insulin?



25. The base sequence AUCGCCGCAUCCUAAGCUUGCAGUCAGUCGGGACUUUGCUCCG is most likely
    a. A starch
    b. RNA
    c. A protein
    d. DNA

26. If the code is UUU CUU AUC, what is the corresponding amino acid sequence?
a. Ser, Gly, Phe,
b. Trp, Phe, Ser
c. Phe, Leu, Ile



27. A change in the base sequence of a gene is
    a. Mutation
    b. Disease
    c. An improved gene

28. Proteins like insulin or hemoglobin that have a mistake in the amino acid sequence usually fail to work well or fail to work at all. The reason the protein does not work is
    a. ribosomes can't read the wrong amino acids to form RNA
    b. varying the amino acid sequence can change a protein into a starch
    c. it is not the right shape to fit together with other molecules "like a lock and key"

Use the following for questions 29-34.
    a. carbohydrate
    b. protein
    c. fat
    d. monosaccharide
    e. Both a and d

29. A single soluble sugar molecule is a

30. Molecules that are primarily used by the human body for energy?

31. Molecules that are primarily used to form structures such as muscle and hair?

32. Insulin is a

33. Endorphins are

34. The most soluble molecule would be a

Use the following for 35-36.
    a. 1/4
    b. 1/2
    c. 3/4
    d. 1

If two people, who are both carriers for sickle-cell anemia (Ss) have a child…

35. what is the chance the child will be normal and not be a carrier of the sickle-cell trait?
36. what is the chance that child will have the disease?

end