

NATS 104 LIFE ON EARTH
SPRING, 2003
FIRST 100-pt EXAM.
(each question 3 points)

Section: _____ (1pt)

Name: _____

Write your name and section on this page. On the bubble sheet write your name Last (space) First (space) M.I. and fill in the appropriate bubbles. Under "Grade or EDUC" put your section. Use "0" for section 31.

1. The 64 possible combinations of nucleic acids in a codon code for the _____ common amino acids found in living organisms.
 - a. 16
 - b. 20
 - c. 40
 - d. 64
 - e. 120

2. AIDS is caused by a
 - a. bacteriophage
 - b. bacterium
 - c. fungus
 - d. protozoan
 - a. virus

3. All _____ are procaryotic single-celled organisms
 - a. algae
 - b. bacteria
 - c. fungi
 - d. protozoans
 - e. viruses

4. Any heritable change in DNA is a
 - a. anaphase
 - b. fertilization
 - c. prokaryote
 - d. metaphase
 - a. mutation

5. Crossovers and inversions occur during
 - a. interphase
 - b. fertilization
 - c. mitosis
 - d. meiosis
 - e. photosynthesis

6. The correct taxonomic name for living humans is
 - a. *Homo sapiens*
 - b. *homo Sapien*
 - c. Homo sapien
 - d. *homo sapiens*
 - e. *Homosapien*

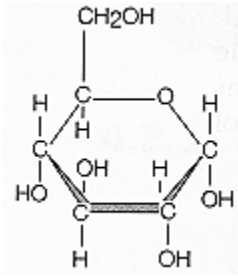
7. During which stage of meiosis do chromatids separate
- anaphase 1
 - anaphase 2
 - metaphase 1
 - metaphase 2
 - telophase 1
8. During which stage of meiosis does the number of chromosomes become haploid?
- anaphase 1
 - anaphase 2
 - metaphase 1
 - metaphase 2
 - telophase 1
9. Elements that have less than or more than the normal number of electrons
- ions
 - isotopes
 - metals
 - nucleic
 - radioactive
10. Eucaryotic cells originated about ___ billion years ago through ___
- 0.5 aerobiosis
 - 1.2 endosymbiosis
 - 3.2 mitosis
 - 3.8 photosynthesis
 - 4.3 respiration
11. The following elements are the most important nutrients for life, and make up 99% of all biological material **except**
- C
 - Fe
 - N
 - O
 - P
12. In humans, gender is determined by the
- X chromosome
 - XX chromosomes
 - X & Y chromosomes
 - Y chromosome
 - YY chromosomes
13. Leibig's Law states that the most important nutrient in a system is the one
- closest to the optimum for the producers that system
 - highest on the food chain of consumers in the system
 - in least abundance relative to the needs for that system
 - with the greatest charge for molecules in the system
 - with the shortest nutrient cycle of that system

14. Malaria is caused by a
- bacteriophage
 - bacterium
 - fungus
 - protozoan
 - retrovirus
15. The offspring of a cross between an Aa and an aa individual are
- all AA
 - all Aa
 - all aa
 - half AA & half aa
 - half Aa & half aa
16. The offspring of a cross between an BB and an bb individual are
- all BB
 - all Bb
 - all abb
 - half BB & half bb
 - half Bb & half bb
17. Molecules are made of _____ held together by _____
- atoms - bonds
 - ions - electrons
 - neutrons – energy
 - polymers – attraction
 - protons - charge
18. Polymers are made of basic units of
- atoms
 - cells
 - electrons
 - molecules
 - neutrons
19. The primary abiotic source of the nutrient Nitrogen for the biosphere is
- Atmosphere
 - Oceans
 - Rivers
 - Sedimentary rocks
 - Soil
20. The primary structure of proteins is determined by
- dRNA
 - mRNA
 - nRNA
 - rRNA
 - tRNA

21. The oxygen of the Earth's atmosphere has accumulated through
- oxidation
 - photosynthesis
 - radioactive decay
 - respiration
 - sexual reproduction
22. In this photosynthesis equation: $\text{H}_2\text{O} + \text{???} \Rightarrow \text{CH}_2\text{O} + \text{O}_2$, the missing substance is
- CH_3
 - CO_2
 - H_2O
 - NO_2
 - O_3
23. Organelles
- are present in eucaryotic cells
 - are absent in procaryotic cells
 - may contain DNA
 - separate chemical reactions in time and space
 - all of the above
- (24 & 25). A red-haired, blue-eyed wildcat (homozygous dominant) and a maroon-haired, gold-eyed sun devil (homozygous recessive) mate and produce ten offspring (wild devils). Two of those offspring (F1) mate and produce sixteen offspring (F2)
24. How many of the F1 will be red-haired?
- 1
 - 2
 - 3
 - 9
 - 10
25. How many of the F2 will be maroon-haired and gold-eyed?
- 1
 - 2
 - 3
 - 9
 - 10
26. Procaryotic cells do not have _____, but eucaryotic cells do.
- cell membranes
 - DNA
 - mitochondria
 - ribosomes
 - RNA
27. Protein synthesis usually takes place on ____ in the ____
- DNA – ribosomes
 - mitochondria - cytoplasm
 - mitochondria - ribosomes
 - ribosomes – cytoplasm
 - ribosomes - mitochondria

28. The figure at the right represents a building block of

- a. DNA
- b. Fat
- c. Protein
- d. RNA
- e. Starch



29. The following microbes are important causes of human diseases **EXCEPT**

- a. archaea
- b. bacteria
- c. fungi
- d. protozoa
- e. sporozoa

30. Regarding the scientific method, what kind of reasoning is used to develop a particular test, based on a general hypothesis?

- a. deductive
- b. hypothetical
- c. inductive
- d. reductive
- e. theoretical

31. Sexual reproduction involves the combination of gametes, the gametes result from the process of _____.

- a. fertilization
- b. meiosis
- c. mitosis
- d. photosynthesis
- e. respiration

32. In the carbon cycle diagram (below, right) the biotic carbon reservoir is changing by ____ petagrams per year

- a. -50
- b. -10
- c. 0
- d. 10
- e. 50

33. In the carbon cycle diagram (below, right) the atmospheric carbon reservoir is changing by ____ petagrams per year

- a. -50
- b. -10
- c. 0
- d. 10
- e. 50

