

Directions: Choose the letter that corresponds to the correct answer.

1. Each amino acid in a protein is specified by
 - A. several genes.
 - B. a promoter.
 - C. an mRNA molecule.
 - D. a codon.

2. Organisms that obtain their energy from light can be termed:
 - A. autotrophic.
 - B. holotrophic.
 - C. chemotrophic.
 - D. heterotrophic.
 - E. heliotrophic.

3. What causes cancer in cells?
 - A. damage to genes
 - B. chemical damage to cell membranes
 - C. UV damage to transport proteins
 - D. All cause cancers in cells.

4. Fermentation
 - A. produces pyruvic acid as end product.
 - B. yields less energy per mole of glucose than aerobic respiration.

- C. occurs only in the presence of oxygen.
- D. prevents glycolysis from occurring.
- E. converts ethanol to glucose.

5. In drosophila (fruit flies), eye color is sex-linked and red eye color is dominant to white eye color. Which of the following are not possible in a cross between a red-eyed male and a heterozygous female?

- A. Red-eyed male.
- B. White-eyed male.
- C. Carrier female.
- D. Homozygous white-eyed female.

6. In respiration, oxygen

- A. combines with lactic acid to form pyruvic acid.
- B. acts as a cofactor for glycolytic enzymes.
- C. yields energy in the form of ATP as it is passed down the respiratory chain.
- D. acts as an acceptor for electrons (and protons), forming water.
- E. combines directly with carbon, forming carbon dioxide.

7. Carbon is an integral part of an ecosystem. It is cycled throughout the ecosystem as it is used and then reused. It is necessary for all life to exist. Carbon is used by plants in the process of:

- A. respiration
- B. photosynthesis
- C. transpiration
- D. decomposition

8. An enzyme is added to an aqueous solution of ATP, DNA, albumen, fat and glycogen; the reaction mixture is incubated for 10 minutes. If an analysis of the mixture reveals the presence of all the above compounds plus glucose, it can be concluded that the enzyme hydrolyzed some of the:

- A. albumen.
- B. fat.
- C. glycogen.
- D. ATP.
- E. DNA.

9. The step of mitosis in which chromosomes line up along the equatorial plane of the cell is called:

- A. Prophase.
- B. Metaphase.
- C. Anaphase.
- D. Telophase.

10. What cellular organelles would you expect to be absent from fungi?

- A. Mitochondria.
- B. Lysosomes.
- C. Ribosomes.
- D. Golgi bodies.
- E. Chloroplasts.

11. Which of the following represents the action of insulin?

- A. increases blood glucose levels by the hydrolysis of glycogen
- B. increases blood glucose levels by stimulating glucagon production

C. decreases blood glucose levels by forming glycogen

D. increases blood glucose levels by promoting cellular uptake of glucose

12. Intracellular organelles that participate in metabolic oxidation involving hydrogen peroxide are called:

A. centrioles.

B. endoplasmic granules.

C. peroxisomes.

D. lysosomes.

E. macro bodies.

13. An extra finger in humans is rare but is due to a dominant gene. When one parent is normal and the other parent has an extra finger but is heterozygous for the trait, what is the probability that the first child will be normal?

A. 0%.

B. 25%.

C. 50%.

D. 75%.

14. Starch, cellulose and glycogen are all

A. proteins.

B. linked internally by hydrogen bonds.

C. water soluble.

D. polymers of glucose.

E. nucleic acids.

15. At some stage of development, all chordates have
- A. a pharynx, a vertebral column, and a notochord.
 - B. pharyngeal pouches, a notochord, and a dorsal tubular nerve cord.
 - C. pharyngeal pouches, a notochord, and a ventral nerve cord.
 - D. pharyngeal pouches, vertebral column, and a dorsal tubular nerve cord.
 - E. a pharynx and an ectodermally derived, solid nerve cord.
16. Petroleum products, which contain carbon, are burned, and the carbon escapes into the atmosphere as carbon dioxide. But how does it get into the petroleum in the first place?
- A. refineries
 - B. plant respiration
 - C. decomposing plankton
 - D. photosynthesis in plants
17. In anaerobic glycolysis in muscle cells one mole of glucose is oxidized to:
- A. six moles of carbon dioxide.
 - B. two moles of acetic acid.
 - C. two moles of lactic acid.
 - D. two moles of acetyl CoA.
 - E. two moles of carbon dioxide and six moles of water.
18. An ecosystem thrives with biotic and abiotic component parts. An example of an abiotic part of an ecosystem is:
- A. micro-bacteria
 - B. fungus
 - C. minerals

D. decaying plants

19. A segment of DNA with the sequence GGCATTAGG would be transcribed into a messenger RNA segment with the sequence:

A. CCGUAAUCC.

B. AATGCCGTT.

C. CCGTAATCC.

D. AAUGCCGUU.

E. CCGTUUTGG.

20. Down syndrome in humans is due to:

A. three copies of chromosome 21.

B. monosomy.

C. two Y chromosomes.

D. three X chromosomes.

21. The movement of water-soluble molecules through cell membranes, from higher to lower concentrations, by attachment to a carrier protein, describes:

A. diffusions.

B. osmosis.

C. pinocytosis.

D. active transport.

E. facilitated diffusion.

22. Organisms that have the characteristics of radial symmetry, water vascular system, a spiny skin, and are found exclusively in a marine habitat would be in which phylum?

- A. Annelida
- B. Chordata
- C. Cnidaria
- D. Porifera
- E. Echinodermata

23. Over time, the same bones in different vertebrates were put to different uses. This falls under the category of:

- A. missing links.
- B. vestigial structures.
- C. analogous structures.
- D. homologous structures.

24. As far as their products are concerned, all biosynthetic reactions in living cells result in:

- A. a more ordered state, therefore a decrease in entropy.
- B. a more ordered state, therefore an increase in entropy.
- C. energy released in the form of ATP.
- D. energy made available for motion.
- E. a more ordered state with no entropy change.

25. To determine an organism's niche, all of the following must be determined, EXCEPT:

- A. how it is classified
- B. what it eats
- C. where it lives
- D. what relationships it has with other organisms