**Exam 1 – Practice questions**

1. **When constructing an experiment in nature, scientists assume that:**
   1. Fundamental laws of nature can change with time and location
   2. Observation is different between experimenters
   3. Reoccurring events have specific causes
   4. Most causes cannot be identified by the scientific method
2. **Cause and effect relationships are:**
   1. The same as correlational incidents
   2. Not the same as correlational incidents
   3. Not a direct result of one event affecting another
   4. Like Autumn and falling leaves
3. **A good scientific hypothesis is:**
   1. Cats hunt in a weird way
   2. Cats hunted differently in 3000 BC, compared to 2023 AD
   3. Cats hunting behavior cannot be studied because cats are not humans
   4. Cats hunt more in daylight than during the night
4. **A theory is:**
   1. Not a general statement
   2. About a fundamental concept in science
   3. Not widely accepted by scientists
   4. No longer tested once it is established
5. **To test the hypothesis that drug X decreases tumor volume, drug was injected in mice who have cancer. After one month, the tumor volumes decreased. Which is the dependent variable?**
   1. Tumor volume
   2. Injected drug
   3. Mice
6. **To test the hypothesis that drug X decreases tumor volume, drug was injected in mice who have cancer. After one month, the tumor volumes decreased. Which would be a suitable control group?**
   1. Healthy mice treated with the drug
   2. Healthy mice not treated with the drug
   3. Mice with cancer treated with the drug
   4. Mice with cancer treated with a similar solution but lacking the drug
7. **To test the hypothesis that drug X decreases tumor volume, drug was injected in mice who have cancer. After one month, the tumor volumes decreased. Which is the independent variable?**
   1. Tumor volume
   2. Injected drug
   3. Mice
8. **To test the hypothesis that drug X decreases tumor volume, drug was injected in mice who have cancer. After one month, the tumor volumes decreased. The hypothesis is rejected.**
   1. True
   2. False
9. **Which of the following is NOT true in regard to drawing conclusions?**
   1. It supports or rejects a hypothesis
   2. It can develop into a theory or law
   3. It may lead to revising the hypothesis
   4. It does not involve communicating with other scientists
10. **Applied science is:**
    1. Theoretical not practical
    2. Does not rely on basic science
    3. Insignificant to human needs and health
    4. Like medicine, agriculture and disease control
11. **Sociology has a poor predictive value. It is therefore classified as:**
    1. Science
    2. Nonscience
    3. Pseudoscience
    4. Answers (b) and (c) are correct
12. **Which of the following is true about science?**
    1. It can answer ethical and religious concerns
    2. It can solely resolve drug abuse and pollution
    3. Science is self-correcting
    4. It is difficult to tell science and pseudoscience apart.
13. **What makes something alive?**
    1. Releasing energy
    2. Manipulating energy
    3. Absorbing energy
    4. It has nothing to do with energy
14. **The highest level of biological organization is \_\_\_\_\_\_\_\_\_\_, while the lowest level of biological organization is \_\_\_\_\_\_\_\_\_\_\_.**
    1. Ecosystem, cells
    2. Communities, molecules
    3. Biosphere, atoms
    4. Biosphere, organisms
15. **Which of the following is NOT a lipid?** 
    1. olive oil
    2. fat
    3. amino acid
    4. steroid
16. **A subunit of protein is a(n)**:
    1. amino acid.
    2. nucleic acid.
    3. fatty acid.
    4. phospholipid.
17. **Which of the following is a function of proteins?** 
    1. Contain information for the cell.
    2. Serve as a subunit in the structure of fat.
    3. Reduce the weight of an individual.
    4. Speed up certain chemical reactions.
18. **A fatty acid having double bonds between carbon atoms is a(n):** 
    1. phospholipid.
    2. animal fat.
    3. unsaturated fat.
    4. saturated fat.
19. **CH3-CH2-CH2-CH2-CH2-CH2-CH2-CH2-CH2-CH2-CH2-CH2-CH2-COOH is a(n):** 
    1. fatty acid.
    2. amino acid.
    3. glycerol.
    4. steroid.
20. **Triglycerides contain three fatty acids and**:
    1. one glycerol.
    2. two glycerols.
    3. three glycerols.
    4. four glycerols.
21. **A number of simple sugars may combine to form:**
    1. protein.
    2. complex carbohydrates.
    3. amino acids.
    4. fat.
22. **One way an amino acid differs from a lipid is that the amino acids contain:** 
    1. carbon.
    2. hydrogen.
    3. nitrogen.
    4. oxygen.
23. **This is a(n) \_\_\_\_ reaction. C12H22O11 + H2O 🡺 C6H12O6 + C6H12O6** 
    1. hydrolysis
    2. dehydration synthesis
    3. acid-base
    4. ionic
24. **Molecules that do not dissolve in water very easily are characteristically:** 
    1. acids.
    2. fats.
    3. vitamins.
    4. carbohydrates.
25. **glycerol + 3 fatty acids 🡺 triglyceride + 3 H2O This is a(n) \_\_\_\_ reaction.** 
    1. hydrolysis
    2. dehydration synthesis
    3. unbalanced
    4. acid-base
26. **An organic molecule is mainly defined as a molecule containing:**
    1. carbon.
    2. hydrogen.
    3. oxygen.
    4. Nitrogen.
27. **The pleating or coiling of a protein is known as the protein's \_\_\_\_ structure.** 
    1. primary
    2. secondary
    3. tertiary
    4. quaternary
28. **Which of these is a copy of DNA that is used to direct the synthesis of a specific protein?** 
    1. A. mRNA
    2. B. rRNA
    3. C. tRNA
    4. D. ribosome
29. **One job of the nuclear membrane is to**:
    1. control entry to and exit from the nucleus.
    2. produce enzymes.
    3. digest chromosomes.
    4. contain excess water.
30. **A storage container in a cell is generally called a(n):** 
    1. vacuole.
    2. endoplasmic reticulum.
    3. pinocyte.
    4. nucleus.
31. **Stroma and grana are found in the:** 
    1. chlorophyll.
    2. nucleus.
    3. chloroplast.
    4. All of these answers are true.
32. **Eukaryotic cells are found in the group known as the:** 
    1. fungi.
    2. plants.
    3. animals.
    4. All of these answers are true.
33. **An outside source of energy (ATP) is required for:** 
    1. osmosis.
    2. diffusion.
    3. active transport.
    4. facilitated diffusion
34. **A carrier molecule is required for:** 
    1. osmosis and active transport.
    2. active transport and facilitated diffusion.
    3. osmosis and diffusion.
    4. facilitated diffusion and endocytosis.
35. **Osmosis is the:**
    1. net movement of water across a differentially permeable membrane.
    2. diffusion of any molecule across a differentially permeable membrane.
    3. net movement of water from an area of low concentration to an area of high concentration.
    4. movement of any molecule from an area of high concentration to an area of low concentration.
36. **Which of the following do NOT contain endoplasmic reticulum?** 
    1. Prokaryotic cells
    2. Animal cells
    3. Eukaryotic cells
    4. All of the choices are correct.
37. **Which of the following structures is found inside the nuclear membrane?** 
    1. endoplasmic reticulum
    2. centriole
    3. cell membrane
    4. nucleolus
38. **The fluid material located outside of the nucleus is the:** 
    1. vacuole.
    2. protoplasm.
    3. cytoplasm.
    4. nucleoplasm.
39. **The direct intake of a liquid, such as oil, into a cell is called:** 
    1. osmosis.
    2. phagocytosis.
    3. induction.
    4. pinocytosis.
40. **A cell that is 98% water is placed in a solution containing 1% salt. This cell is now \_\_\_\_ compared to its surroundings.** 
    1. isotonic
    2. hypertonic
    3. hypotonic
    4. hydrophilic
41. **A cell containing 2% dissolved materials is placed in a solution consisting of 4% solute. The net movement of \_\_\_\_ molecules will be \_\_\_\_ the cell due to osmosis.** 
    1. solute, into
    2. solute, out of
    3. water, into
    4. water, out of
42. **An intravenous (IV) solution must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to a person's red blood cells to prevent injury to the cells.** 
    1. isotonic
    2. hypertonic
    3. hypotonic
    4. osmotic
43. **A given enzyme works on** 
    1. any number of different substrates.
    2. one of two possible substrates.
    3. no substrate.
    4. one type of substrate.
44. **An enzyme is also known as:** 
    1. an inorganic protein.
    2. an organic catalyst.
    3. a metal ion.
    4. an inhibitor.
45. **The substrate is:**
    1. the material changed by an enzyme.
    2. a coenzyme.
    3. the material formed by an enzyme.
    4. always a protein.
46. **Denature means to permanently change a(n):** 
    1. amino acid.
    2. protein.
    3. fat.
    4. carbohydrate.
47. **The reason why an enzyme fits a specific substrate is due to its:** 
    1. inhibitor.
    2. three-dimensional shape.
    3. acid side chain.
    4. nuclear membrane.
48. **The rate of an enzyme reaction is the:** 
    1. optimum number.
    2. substrate number.
    3. turnover number.
    4. activation number.
49. **An enzyme that works in the stomach may not work in the small intestine because:** 
    1. the pH of the stomach contents is different than that found in the intestine.
    2. the temperature is so different that the enzyme will be inhibited from taking action.
    3. enzymatic competition will result in the denaturation of the substrate.
    4. there will not be enough collisions to result in enzyme-substrate formation.