BSC2093 C – A&PI – Study Guide for Exam #1

1. The human body is composed of different levels of organization.

1. The lowest level of organization is the \_\_\_\_\_\_\_\_\_\_\_\_\_llevel.
2. The lowest level of organization that is considered to be “alive” is the \_\_\_\_\_\_\_ level.
3. The level of organization consisting of groups of cells similar in structure and function is the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ level.

2. Name 4 life processes (characteristics of life) carried out by living cells.

a. c.

b. d.

3. Iron has an atomic number of 26 and an atomic mass (weight) of 55. Accordingly, each iron atom

would contain \_\_\_\_\_\_\_\_\_\_ protons, \_\_\_\_\_\_\_\_\_\_\_ electrons and \_\_\_\_\_\_\_\_\_\_\_ neutrons

4. Iron is a cation meaning it carries a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrical charge. How many protons

would this cation have? \_\_\_\_\_\_\_\_\_\_\_\_. How many electrons? \_\_\_\_\_\_\_\_\_\_\_

5. How would an isotope differ from a “regular” atom of iron?

6. Chemical bonds result from the electrical attraction between atoms. In \_\_\_\_\_\_\_\_\_\_\_ bonds,

One or more electrons are transferred to another atom, making the receiving atom into a

\_\_\_\_\_\_\_\_\_\_ ion.

7. Atoms may also share electrons. If 2 atoms share electrons equally, the bond is called a

\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond. If the electrons are not shared equally, as in the water

molecule, the bond is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond.,

8. The pH scale is a measure of the amount of \_\_\_\_\_\_\_\_ ions present.. Acidic solutions have a pH

below a pH of\_\_\_\_\_\_\_ while alkaline solutions have a pH between pH \_\_\_\_\_\_ and pH \_\_\_\_\_\_\_\_.

When the pH drops from 4 to 3, that means there are \_\_\_\_\_ times \_\_\_\_\_\_\_\_(more or less) H+

Ions present.

9. Name the 3 general kinds of lipids –

a. b. c.

10. Name the monomers that are joined together to form a polysaccharide carbohydrate.

Name the monomers used to build a protein.

11. What is the difference between a saturated and an unsaturated fat?

Which type of fat is solid?

12. What is the name of the polysaccharide found in humans?

What is the **Function** of that polysaccharide?

13. Name the chemical elements that make up a protein.

Write the chemical formula for glucose.

14. Name the 2 functional groups found in an amino acid.

DRAW and label the components of an amino acid.

15. Give the 3 “characteristics” of a dehydration synthesis reaction.

Give the 3 characteristics of a decomposition (hydrolysis) reaction.

16. What do we mean by the primary structure of a protein?

17. Which kind of organic molecule is insoluble in water?

What term do we give to compounds that do not dissolve in water?

18. Name the 3 components of a nucleic acid.

19. what are the 2 main functions of nucleic acids?

20. What is the difference between a purine and pyrimidine base?

21. Name the 2 purine bases found in DNA.

Name the 2 pyrimidine bases found in RNA.

22. Name the 3 components of a negative feedback mechanism and tell each components role.

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23. List the 5 steps of the scientific method in the order in which they take place.

24. Complete the following table comparing Diffusion and Active Transport

Diffusion Active Transport

Requires a concentration gradient –

Requires an expenditure of energy –

25. In an experiment a living cell is placed in a hypotonic solution. Compared to the cell, the

Solution has \_\_\_\_ water. So, water diffuses \_\_\_\_ of the cell and the cell \_\_\_\_\_\_\_\_ in size.

26. Tell the difference between Diffusion and Osmosis.

27. Tell the difference between a hypotonic and hypertonic solution.

28. Name the 3 components of the thoracic cavity. And tell what is found in each.

a.

b.

c.

29. A transverse plane divides the body into –

30. What is the difference between 2 organs that are ipsilateral compared to 2 that are contralateral?

31. Describe the structure of a Nucleosome.

32. Tell the function of the following organlelles –

a. Rough endoplasmic Reticulum –

b. Lysosome –

c. Mitochondria –

d. Centrosome –

33. Tell the structure of each of the following organelles – name the structure – membranes, protein, lipid, carbohydrate, nucleic acid –

a. cilia and flagella –

b. Golgi apparatus –

c. Smooth Eendoplasmic Reticulum –

d. nucleolus –

34. Name the 3 stages of Interphase and tell what happens during each stage.

35. Name the 4 phases of Mitosis and describe what happens during each phase.

36. Fibroblasts are characteristic of which of the 4 kinds of tissues?

Name the 3 kinds of fibers produce4d by fibroblasts.

37. Name the 4 “special” types of connective tissue and describe the composition of the matrix for each

Type 1. 3..

2 4

38. Tell the 2 characteristics used to separate the different kinds of epithelial tissues.

39. Which type of SPECIFIC tissue makes up most of the epidermis?

Name the 2 primary kinds of cells found in the epidermis –

What kinds of tissue are found in the dermis?

What specific type of tissue is found in the Hypodermis?

40. Name 4 functions performed by the Integumentary system

a. b. c. d.

41. Describe a Gap Junction and tell why it is built in this way.

42. Tell the difference between and exocrine and endocrine gland

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Tell the difference between an apocrine and a holocrine gland.

43. Name the 2 parts of a serous membrane and tell where they are found.

What is the composition of serous fluid and what is its function?

44. Name 3 characteristics of epithelial tissue.

a. b. c.

45. Define the following terms –

a. hyperplasia –

b. hypertrophy –

c. atrophy –

d. neoplasia –

46. Tell the function of the following types of connective tissue cells –

a. macrophages –

b. adipocytes –

c. mast cells –

47. Tell the difference between sebaceous and sudoriferous glands –

48. Tell 4 changes that occur in epidermal cells as they move out from the basement membrane to the surface of the skin.

a. c.

b. d.

49. Tell the difference in the structure of the papillary and reticular layers of the dermis.

Papillary layer Reticular layer

50. The air sacs of the lungs are lined with simple squamous epithelial cells. Explain why this structure is important.