Sample Questions

1. Which of the following historically relevant scientists was responsible for discovering a vaccine for rabies and for disproving the idea of "spontaneous generation"?
   A) Louis Pasteur
   B) Edward Zirm
   C) Ioannis Yannis
   D) Camillo Golgi
   E) None of the above are correct.

2. When you think of the lymphatic system, which of the following are correct?
   A) The lymph is a watery solution that typically collects on the outside of the cells and needs to be collected and transported back into circulation.
   B) The fluid moves to the circulatory system.
   C) This system houses many of the immune cells of the body.
   D) Two of the above are correct.
   E) All of the above are correct.

3. Homeostasis is the condition in which the body maintains
   A) the highest possible metabolism.
   B) a state that fluctuates only within relatively narrow ranges.
   C) a relatively stable internal environment.
   D) a static state with absolutely no deviation from preset points.
   E) Two of the above is correct.

4. Which of the following correctly describes the structural arrangement of the membrane of the endoplasmic reticulum?
   A) A bilayer of lipid molecules in which protein molecules are embedded but can move about
   B) A bilayer of protein—one layer on the outside is hydrophillic and the other one is hydrophobic
   C) A solid, rigid layer of lipid with loosely bound protein molecules
   D) Three layers: lipid on the inside, protein in the middle, and carbohydrates (and polysaccharides) on the outside
   E) Two of the above are correct.

5. Which of the following best describes simple squamous epithelial tissue?
   A) Flat cells in multiple layers
   B) Tube-like cells in a single layer
   C) Boxly shaped cells in multiple layers
   D) Pancake-like shaped cells in a single layer
   E) Two of the above are correct.

6. Support, protection of soft tissue, mineral storage, and blood formation are functions of which system?
   A) Nervous
   B) Integumentary
   C) Muscular
   D) Skeletal
   E) None of the above

7. The numbers listed represent the first, second, and third energy levels of electrons respectively. On this basis, which of the following is a stable or non-reactive atom?
   A) 2, 7
   B) 2, 8, 1
   C) 2, 8, 8
   D) 2, 3
   E) Two of the above are quite stable.

8. The internal transport of cells and dissolved substances is the function of the
   A) circulatory system.
   B) nervous system.
   C) endocrine system.
   D) integumentary system.
   E) none of the above

9. Active transport processes include
   A) the use of transport proteins when moving substances from areas of high to low concentration.
   B) movement of a substance from a region of high concentration to low concentration.
   C) consumption of ATP.
   D) Two of the above are correct.
   E) None of the above are correct.

10. The reason the hypodermis acts as a shock absorber is
    A) it has no delicate blood vessels and can therefore absorb more shock.
    B) because the major part of its make-up is adipose, and adipose tissue serves as an effective shock absorber.
    C) it is located just below the epidermis and protects the dermis from shock.
    D) because the cells that make up the hypodermis secrete a protective mucus.
    E) the hypodermis is not a shock absorbing tissue.

11. Skin, hair, and nails are associated with the
    A) skeletal system.
    B) muscular system.
12. The production of skin darkening pigments occurs in the
A) stratum basale of the epidermis.
B) stratum corneum of the dermis.
C) stratum corneum of the epidermis.
D) stratum basale of the dermis.
E) stratum corneum of the hypodermis.

13. When exposed to the T-shirts worn by a group men for a period of time, women who were taking birth control pills in the study I discussed in lecture preferred
A) men with different immune system genetics as themselves.
B) men with similar immune system genetics as themselves.
C) to leave the room as the smell was nauseating to them.
D) to no longer take birth control pills because of the risk in harming their estrogen metabolism.
E) none of the above. The study had men smell women’s t-shirts for immune system choice patterns.

14. Cartilage seen connecting the ribs to the sternum is composed of
A) fibrocartilage.
B) elastic cartilage.
C) hyaline cartilage.
D) cortocostal cartilage.
E) Two of the above are correct.

15. Which of the following terms refers to the front or chest and abdominal regions of the body?
A) Lateral
B) Anterior
C) Dorsal
D) Ventral
E) Both B and D.

16. Which of the following is not true of melanin?
A) People whose ancestors originated nearer the north or south pole tended to have very low melanin levels due to the lower UV levels.
B) People whose ancestors originated nearer the equator tended to have significantly higher melanin levels to help protect them from sun damage.
C) High melanin concentrations in the skin could hinder vitamin D production in central America.
D) In some people, melanin distribution is dense in small spots on the skin—these are called freckles.
E) Because all the above are true of melanin, I select this letter to signify the question is not answerable as written.

17. If you have a cell with a 10% lead chloride solution as part of its cytoplasm in an environment of 95% water, which of the following is true (presume the lead chloride is a compound that is impermeable to the cell membrane):
A) the solution in the cell is hypotonic to the solution outside the cell
B) movement of lead chloride will be out of the cell
C) movement of water will be into the cell
D) Two of the above are correct.
E) None of the above are correct.

18. An endocrine gland
A) secretes material into the bloodstream.
B) expels material outside the body.
C) would be a likely mechanical device for the expression of pheromones.
D) Two of the above are correct.
E) All of the above are correct.

19. The color brown that is seen in natural brown hair is a result of
A) melanin pigments.
B) minerals.
C) ribbon hair shafts.
D) Two of the above are correct.
E) All of the above are correct.

20. What is the role of the arrector pili?
A) It will raise the hair on the back of your neck when it contracts.
B) It is a sensory structure of the nervous tissue in the dermis.
C) It is a layer in the hypodermis.
D) Two of the above are correct.
E) None of the above are correct.

21. The atoms of the isotopes of a particular element vary in the number of
A) nuclei.
B) neutrons.
C) protons.
D) electrons.
E) Both protons and neutrons.

22. A solution that has a greater number of hydronium ions than hydrogen ions will be
A) acidic.
B) basic.
C) alkaline.
D) Two of the above are correct.
E) None of the above are correct.

23. In living cells, the weakest bond between two or more molecules is the _____ bond.
A) ionic
B) pentamic
C) polar covalent
D) nonpolar covalent
E) hydrogen

24. The Golgi is best described as
A) an energy producing organelle that is green and in plants.
B) a movable membrane consortium.
C) network of interconnected membranes that produces hormones.
D) a series of stacked sacs that will produce packets of materials for the cell.
E) a "power house" for energy production.

25. When body temperature rises, a center in the brain initiates physiological changes to
decrease the body temperature. This is an example of
A) negative feedback.
B) positive feedback.
C) nonhomeostatic regulation.
D) diagnostic regulation.
E) disease.

26. Which of the following historically relevant scientists was responsible for the first
successful corneal transplant?
A) Louis Pasteur
B) Niels Bohr
C) Edward Zirm
D) Ioannis Yannis
E) None of the above are correct.

27. Which of the following is colloquially referred to as “cell fishing”?
A) Phagocytosis
B) Pinocytosis
C) Receptor mediated exocytosis
D) Particocytosis
E) Receptor mediated endocytosis

28. Chemical reactions that occur in the human body are controlled by special catalytic
molecules called
A) cofactors.
B) cytozymes.
C) enzymes.
D) activators.
E) none of the above

29. Which of the following substances would be most acidic?
A) Lemon juice, pH = 2.5
B) Urine, pH = 6
C) Tomato juice, pH = 4
D) White wine, pH = 3
E) Stomach secretions, pH = 2

30. The muscle type found in the pectoralis major is
A) cardiac.
B) smooth.
C) skeletal.
D) voluntarily controlled.
E) Two of the above are correct.

31. Exposure to sunlight causes the skin to darken by stimulating the production of
A) pigmentocin.
B) carotene.
C) hemoglobin.
D) cyanin.
E) None of the above

32. The process by which vesicles containing liquids collected on the surface of a cell for
transport into the cell is called
A) pinocytosis.
B) phagocytosis.
C) exocytosis.
33. Each of the following is an example of a membranous organelle except one. Identify the exception.
A) Lysosomes
B) Ribosomes
C) Mitochondria
D) ER
E) Golgi

34. Which of the following best describes the quaternary structure of proteins?
A) The four strands of the hemoglobin molecule
B) The amino acid sequence A-T-C-C-C-C-G
C) The chemical formula of a protein
D) Two of the above are correct.
E) All of the above are correct.

35. Which of the following is true about early anatomy and physiology?
A) The use of the common languages of Latin and Italian lead to rapid growth and development of the science.
B) Observations of the effects of what people ate, drank, and/or smoked were recorded and used as primitive "medicines."
C) Societies began to persecute physicians who studied the human body because they were thought of as being active in pornography.
D) Two of the above are correct.
E) All of the above are correct.

36. When we say that one end of the phospholipid is hydrophilic, we mean
A) the chemical properties are such that the molecule will readily interact with water soluble compounds.
B) The chemical properties are such that the molecule will readily interact with oil soluble compounds.
C) the molecule will dissolve in oil.
D) A and C are correct.
E) B and C are correct.

37. If you are told an individual has an oval shaped hair shaft, and the hair shaft has low concentrations of melanin and high concentrations of minerals including iron, which of the following best describes this individual’s hair?
A) It is straight and black.
B) It is wavy and reddish brown.
C) It is straight and a yellowish blonde.
D) It is curly and brown.
E) None of the above are correct.

38. From your readings, which of the following terms are correct about cancer?
A) A "neoplasm" is another name for a tumor.
B) A malignant tumor is safe while a benign tumor is dangerous.
C) Oncogenes are cancer preventing genes.
D) Two of the above are correct.
E) All of the above are correct.

39. During the process of mitosis, chromatids separate into daughter chromosomes during
A) anaphase.
B) telophase.
C) interphase.
D) metaphase.
E) prophase.

40. Simple diffusion is best described as
A) movement of water against the concentration gradient.
B) movement of solutes with the concentration gradient with carrier phosphate molecules.
C) movement of material using no carrier proteins from regions of high concentration to regions of low concentration.
D) Two of the above are correct.
E) None of the above are correct.

41. A common location for fibrocartilage is
A) between the ribs.
B) connecting the ribs to the sternum.
C) in the ears.
D) separating individual vertebra.
E) Two of the above are correct.
42. A person’s hair texture is determined mostly by
A) the length of the hair.
B) the cross-sectional diameter and shape of the follicle.
C) the shampoo used.
D) the endoplasmic reticulum found in the hair shaft.
E) none of the above

43. Place the following in correct sequence from the simplest to most complex:
1. tissues
2. organ system
3. ecosystem
4. atoms
5. molecules
A) 4-5-7-6-1-3-8-2-9
B) 4-5-1-7-6-2-3-9-8
C) 5-4-6-1-7-2-8-2-9
D) 4-5-7-6-1-2-9-3-8
E) None of the above is the proper arrangement.

44. All of the following are true of the pigment melanin, except
A) increases in concentration within cells during exposure to the sun.
B) is usually some shade of red or blue.
C) protects DNA from the damaging effects of U.V. radiation.
D) is produced by cells called melanocytes.
E) Two of the above are false so I select this answer.

45. The layer of the epidermis that contains cells that readily flake off when touched is the
A) stratum corneum.
B) stratum lucidum.
C) stratum germinativum.
D) stratum granulosum.
E) stratum spinosum.

46. Each of the following is a function of the skeletal system except one. Identify the exception.
A) Mineral storage
B) Red marrow activity
C) Maintenance of body temperature
D) White blood cell production
E) Two of the above are exceptions, so I select this answer.

47. From your readings, which of the following are true about skin conditions?
A) Rosacea is a disorder where abnormal flushing of the facial skin occurs.
B) Port wine stains often have the appearance of burns but are actually birthmarks on the skin.
C) Blepharopigmentation is the process of having a permanent tattoo of "eyeliner" over the edges of each eyelid. (Michael Jackson has this type of tattoo.)
D) Two of the above are correct.
E) All of the above are correct.

48. Predict from your overall understanding the most likely name given to fat storage cells.
A) Fibroblasts
B) Fixed macrophages
C) Adipocytes
D) Mast cells
E) Melanocytes

49. Moisturizing skin and hair via oil secretions is an activity of
A) the sebaceous glands.
B) a type of exocrine gland.
C) the sweat gland.
D) A and B are correct.
E) B and C are correct.

50. Sweat is composed of
A) water.
B) salt.
C) oil.
D) Two of the above are correct.
E) All of the above are correct.