Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. One benefit of being a large organism is that you have
   a. Larger cells.
   b. fewer predators.
   c. simpler functions.
   d. only one kind of cell.

2. A group of cells with the same function makes up
   a. an organism.
   b. an organ system.
   c. a tissue.
   d. a structure.

3. An organ consists of
   a. two or more tissues.
   b. a group of cells.
   c. two or more systems.
   d. nerves and muscles.

4. An organ system has
   a. one kind of tissue.
   b. only one function.
   c. two or more organs.
   d. one main kind of cell.

5. Even simple multicellular organisms can have
   a. organs.
   b. specialized cells.
   c. systems.
   d. colonies.

6. The highest level of organization is the
   a. cell.
   b. tissue.
   c. organ.
   d. system.

7. The functions of an organism’s parts are related to those parts’
   a. structures.
   b. systems.
   c. blood cells.
   d. alveoli.

8. Robert Hooke and Anton van Leeuwenhoek not only helped discover cells but also
   a. discovered that cells came from existing cells.
   b. helped develop the microscope.
   c. concluded that all living things had cells.
   d. discovered mushrooms and fungi.
9. Leeuwenhoek called the single-celled organisms that he found in pond scum “animalcules.” Today we know them as
   a. animals.  
   b. plant life.  
   c. fungi.  
   d. protists.

10. Scientist Matthias Schleiden contributed to the cell theory by concluding that
   a. the cells of plants and animals were the same.  
   b. all plant parts were made of cells.  
   c. the cells of plants were different from those of animals.  
   d. all animal tissues were made of cells.

11. Which of the following statements is not part of the cell theory?
   a. Animals and plants share the same kinds of cells.  
   b. All organisms are made up of one or more cells.  
   c. The cell is the basic unit of all living things.  
   d. All cells come from existing cells.

12. Most cells are a very small size because
   a. they don't have hard shells like eggs.  
   b. their volume does not increase.  
   c. their volume is limited by how large their surface area is.  
   d. their surface area-to-volume ratio is too small.

13. What cell part supports the cell and might be made of cellulose or chitin?
   a. cell membrane  
   b. cell wall  
   c. ribosome  
   d. nucleus

14. What part of the cell forms a barrier between the cell and its environment?
   a. cell membrane  
   b. nucleus  
   c. ribosome  
   d. cholesterol

15. What part of the cell keeps the cell membrane from collapsing?
   a. cell wall  
   b. cytoplasm  
   c. cytoskeleton  
   d. nucleus

16. Ribosomes, the organelles that make proteins, are found on the membranes of the
   a. cell wall.  
   b. endoplasmic reticulum.  
   c. mitochondria.  
   d. vacuoles.

17. Energy released by a cell’s mitochondrion is stored in
   a. ATP.  
   b. DNA.  
   c. the ER.  
   d. RNA.

18. What cell parts carry materials between organelles such as the ER and the Golgi complex?
   a. ribosomes  
   b. lysosomes  
   c. vesicles  
   d. vacuoles
19. Larger size, longer life, and specialization are three advantages to being a
   a. eukaryote.                          c. unicellular organism.
   b. prokaryote.                        d. multicellular organism.

20. The function of a part of an organism is related to
   a. its arrangement of cells.           c. the structure of that part.
   b. the shape of its parts.             d. its appearance under a microscope.

21. Which statement is NOT part of the cell theory?
   a. All organisms are made of one or more cells.
   b. Animal and plant cells contain the same organelles.
   c. The cell is the basic unit of living things.
   d. All cells originate from other cells.

22. A cell’s volume grows faster than its surface area, so if a cell gets too large
   a. its surface area–to-volume ratio will decrease.
   b. the cell membrane and cell walls will break down.
   c. its outer surface will harden like an eggshell does.
   d. it will not be able to take in enough nutrients or get rid of wastes.

23. A large vesicle that aids in digestion within plant cells the way lysosomes do is called
   a. an enzyme.                          c. a mitochondrion.
   b. a vacuole.                         d. a nucleolus.

24. Most of a cell’s ATP is made and stored in the inner membrane of the
   a. Golgi complex.                     c. endoplasmic reticulum.
   b. nucleus.                          d. mitochondrion.

25. What keeps the size of most cells very small?
   a. their hard shells                   c. food and wastes
   b. the surface area–to-volume ratio   d. their thin surfaces

26. Robert Hooke thought that animals did not have cells because he
   a. had not yet invented the microscope.
   b. could not see animal cells in his microscope.
   c. had not yet discovered protists.
   d. was looking at dead cork cells, not live ones.

27. Which two things must be compared to explain why almost all cells are small?
   a. surface area and volume             c. food production and waste elimination
   b. the shell and the yolk              d. membranes and organelles

28. What is cytoplasm?
   a. the nucleus of a cell               c. the genetic material in a cell
   b. the fluid inside a cell             d. the proteins in a cell

29. What does the Golgi complex do in a cell?
   a. It packages and distributes proteins.  c. It makes sugar and oxygen.
   b. It is the power source of the cell.    d. It makes proteins
30. What is the job of the lysosomes?
   a. They store water.  
   b. They digest food particles.  
   c. They make new cells.  
   d. They package proteins.

31. What step did Mendel take to be sure that his pea plants cross-pollinated?
   a. He used two white plants.  
   b. He removed the anthers of one plant.  
   c. He added anthers to both plants.  
   d. He used plants that were not true breeding.

32. A plant with two dominant OR two recessive alleles is said to be
   a. heterozygous.  
   b. cross-pollinating.  
   c. homozygous.  
   d. true breeding.

33. Which one of the following statements is NOT true?
   a. One gene can influence many traits.  
   b. Several genes can influence a single trait.  
   c. The environment can have an influence on traits.  
   d. Genes are the only influence on traits.

34. Instructions for an inherited trait are called
   a. alleles.  
   b. phenotype.  
   c. albinism.  
   d. genes.

35. Which one of the following is the name for the way cells divide in asexual reproduction?
   a. twins  
   b. mitosis  
   c. meiosis  
   d. homologous

36. What is a trait?
   a. different forms of meiosis  
   b. different forms of a pedigree  
   c. different forms of chromatids  
   d. different forms of a characteristic

37. When a plant fertilizes itself, it is called a(n)
   a. allele plant.  
   b. true-breeding plant.  
   c. self-pollinating plant.  
   d. cross-pollinating plant.

38. Two forms of a gene, one from each parent, are called
   a. alleles.  
   b. phenotypes.  
   c. albinism.  
   d. genes.

39. Offspring that are different from both parents are produced by
   a. asexual reproduction.  
   b. something going wrong.  
   c. sexual reproduction.  
   d. mitosis.

40. What are chromosomes that carry the same sets of genes?
   a. twin chromosomes  
   b. homologous chromosomes  
   c. ordinary chromosomes  
   d. asexual chromosomes
41. What is heredity?
   a. traits passing from offspring to parents  
   b. traits passing from parents to offspring  
   c. plants that are cross-pollinated  
   d. the ratio of dominant to recessive traits

42. What is a plant that has two dominant genes or two recessive genes called?
   a. organism  
   b. genotype  
   c. homozygous  
   d. heterozygous

43. Using X-ray diffraction, what did Rosalind Franklin show the shape of DNA to be?
   a. a circle  
   b. a spiral  
   c. a square  
   d. a line

44. The sides of the DNA “ladder” are made of
   a. guanine and thymine.  
   b. adenine and cytosine.  
   c. sugar and phosphate.  
   d. helixes and twists.

45. The “rungs” of the DNA ladder are
   a. a pair of bases.  
   b. a pair of sugars.  
   c. a pair of phosphates.  
   d. a set of proteins.

46. To be copied, a DNA molecule splits
   a. across the top.  
   b. down the middle.  
   c. along the sides.  
   d. along the phosphates.

47. What is the type of mutation where a base is added to the gene?
   a. deletion  
   b. substitution  
   c. insertion  
   d. ultraviolet

48. Who first found out that DNA has a spiral shape?
   a. Rosalind Franklin  
   b. James Watson  
   c. Erwin Chargaff  
   d. Francis Crick

49. What is a string of nucleotides called?
   a. a ribosome  
   b. a gene  
   c. a rule  
   d. a chromosome

50. Which is the first step of DNA replication?
   a. Two complete, identical strands of DNA pair up.  
   b. New nucleotides attach to exposed bases.  
   c. A strand of DNA splits down the middle.  
   d. Adenine and thymine make a base pair.
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