

Biology A Final Exam Review

Name: _____ Date: _____ Hour: _____

UNIT 1 – Introduction to Microscopy

1. Biology is the study of _____.
2. List the 8 characteristics of life.
3. Define metabolism & give an example.
4. Define evolution & give an example.
5. Define homeostasis & give an example.
6. A tadpole becoming a frog is an example of which characteristic of life?
7. List of the four reasons viruses are not considered living things:
8. Life comes from other living things: BIOGENESIS or SPONTANEOUS GENERATION
9. Life arises from non-living matter: BIOGENESIS or SPONTANEOUS GENERATION
10. What did Redi's experiment involve?
11. Did Redi's results support biogenesis or spontaneous generation?
12. What did Needham's experiment involve?
13. Did Needham's results support biogenesis or spontaneous generation?
14. What did Spallanzani's experiment involve?
15. Did Spallanzani's results support biogenesis or spontaneous generation?
16. What did Pasteur's experiment involve?
17. Did Pasteur's results support biogenesis or spontaneous generation?

18. What is a hypothesis?

19. In an experiment testing how various amounts of water affect the growth of the tomato plant, what would be the...

- a. Independent variable –
- b. Dependent variable –
- c. Control –
- d. Constants (list 3) –

20. What is the purpose of a control group?

21. When using a microscope, which adjustment knob & lens should you use first?

22. On a microscope, what does the iris diaphragm do?

UNIT 2 – Energy Transfer

23. What is the monomer of carbohydrates?

24. Name three functions of carbohydrates.

25. Describe photosynthesis in words...

26. Write the equation for photosynthesis using the chemical formulas.



27. What are the two reactants of photosynthesis?

28. What are the two products of photosynthesis?

29. Does photosynthesis store or release energy?

30. What is a pigment?

31. What pigment is used by plants to perform photosynthesis?

32. In what organelle does photosynthesis take place?

33. Describe cellular respiration in words...

34. Write the equation for cellular respiration using the chemical formulas.



35. What are the two reactants of cellular respiration?

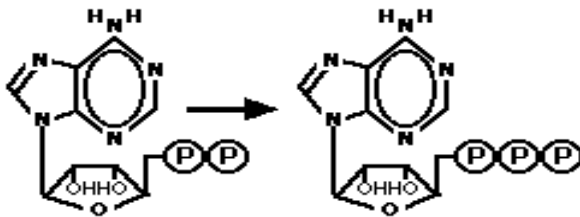
36. What are the two products of cellular respiration?

37. Does cellular respiration store or release energy?

38. In what organelle does cellular respiration take place?

39. List two reasons why photosynthesis and cellular respiration are considered opposite processes.

40. Name the structures below as ATP and ADP. How can you tell which is which?



41. What must be done to release energy from ATP?

42. What must be done to add energy to ADP?

43. What does aerobic mean?

44. What does anaerobic mean?

45. Cellular respiration is: aerobic or anaerobic?

46. Fermentation is: aerobic or anaerobic?

47. Why do cells prefer to perform cellular respiration over fermentation?

48. What process do yeast cells perform when there is oxygen available?

49. What process do yeast cells perform when there is NO oxygen available?

50. What process do muscle cells perform when there is oxygen available?

51. What process do muscle cells perform when there is NO oxygen available?

UNIT 3 – Protein Synthesis

52. What is the monomer of protein?

53. List eight functions/types of proteins.

54. What is the monomer of nucleic acid?

55. What are the two types of nucleic acids?

56. DNA

- a. Contains the sugar is _____
- b. Contains the four nitrogen bases are adenine, guanine, cytosine & _____.
- c. Is a _____-stranded molecule.
- d. Codes for _____.
- e. Give the complementary DNA strand. GCA TCG GCT AAA

57. RNA

- a. Contains the sugar is _____
- b. Contains the four nitrogen bases are adenine, guanine, cytosine & _____.
- c. Is a _____-stranded molecule.
- d. What are the three types & what is the function of each?
- e. Give the complementary RNA strand. GCA TCG GCT AAA

58. What are the two processes of protein synthesis?

59. When do the following take place: transcription or translation?

- a. DNA is unzipped.
- b. tRNA brings amino acids to the ribosome.
- c. mRNA is made.
- d. mRNA is read by a ribosome.
- e. A chain of amino acids (protein) is made.

60. Where does transcription occur in the cell?
61. Where does translation occur in the cell?
62. What has been made at the end of protein synthesis?
63. What is a mutation?
64. List three reasons why DNA might mutate.
65. True or False:
- a. Mutations always change the nucleotide sequence.
 - b. Mutations always change the amino acid sequence.
 - c. Mutations always change how the protein works.
 - d. Mutations are usually harmful.
 - e. Mutations are usually beneficial.

UNIT 4 – The Cell Membrane

66. What type of molecule is found in membranes and waterproofing structures?
67. What two types of molecules are used by the body as an energy source?
68. What is the function of the cell wall?
69. What is the function of the cell membrane?
70. Diffusion:
- a. Requires energy? Yes No
 - b. Requires a protein? Yes No
71. Facilitated diffusion:
- a. Requires energy? Yes No
 - b. Requires a protein? Yes No
72. Active transport:
- a. Requires energy? Yes No
 - b. Requires a protein? Yes No
73. The diffusion of water across a selectively permeable membrane is called _____.
74. What happens to an animal cell in a hypotonic solution?
75. What happens to a plant cell in a hypotonic solution?

76. What happens to an animal cell in a hypertonic solution?

77. What happens to a plant cell in a hypertonic solution?

UNIT 5 – Cell Parts & Functions

78. Bacteria are: prokaryotic or eukaryotic

79. Plants & animals are: prokaryotic or eukaryotic

80. List the only organelles found in prokaryotic cells.

81. List the organelles that can be found in animal cells, but not plants.

82. List the organelles that can be found in plant cells, but not animals.

83. Which organelle reads mRNA to make proteins?

84. Which organelle contains DNA?

85. Which organelle breaks down unwanted/unused materials?

86. Which organelle attaches chemical signals to proteins for transport?

87. Which organelle stores unwanted/unused materials?

88. Which organelle helps the chain of amino acids fold into a protein?

89. Which organelles aid in the movement & signals of some animal/prokaryotic cells?

90. List the levels of organization from SMALLEST to LARGEST

Cells _____

91. All cells perform the same tasks in multicellular or colonial organisms?

92. Cells depend on each other in multicellular or colonial organisms?

93. All cells contain the same organelles in multicellular or colonial organisms?

94. Cells that have not become specialized yet are called _____ cells.

95. What are the two types of stem cells? Give advantages & disadvantages of each.

UNIT 6 – The Cell Cycle

96. As a cell grows,

- a. It has trouble _____.
- b. Places more demands on _____ to produce enough _____.

97. During which part of the cell cycle is the cell performing normal cellular functions?

98. During which part of the cell cycle is the cell replicating its DNA?

99. During which part of the cell cycle is the cell copying its organelles & checking for mistakes in the DNA?

100. Label each as either mitosis or meiosis:

- a. Performed for growth and repair of the organism.
- b. Performed for sexual reproduction of the organism.
- c. Produces gametes.
- d. Produces somatic cells.
- e. Produces 4 genetically different cells.
- f. Produces 2 genetically identical cells.
- g. Homologous chromosomes form tetrads.
- h. Crossing over occurs.

101. List the 4 phases of mitosis in order.

102. What happens during prophase? (4)

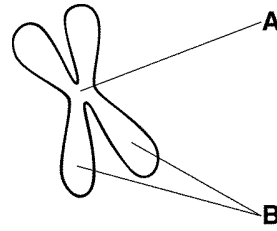
103. What happens during metaphase? (1)

104. What happens during anaphase? (1)

105. What happens during telophase? (4)

106. In the figure to the right, what is:

- a. Part A called?
- b. Part B called?



107. List the 8 phases of meiosis in order.

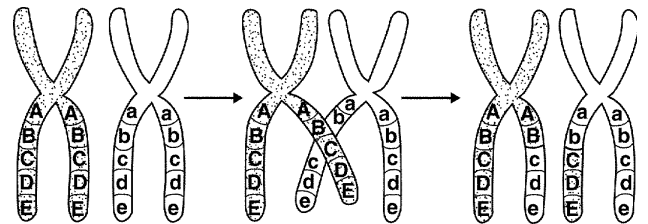
108. Homologous chromosomes:

- a. Definition:
- b. One is received from _____ and one from _____.
- c. They form _____ during prophase I.
- d. They undergo the process of _____ during prophase I.

109. What happens in prophase I of meiosis that doesn't happen in mitosis? (2)

110. What process is shown on the right?

111. Why is crossing over advantageous?



112. When some cells have lost the ability to control their growth & division it is called

_____.