

## Biology EOCT Review

### Section 1: Nature of Science

1. Bobby thinks that eating fish for breakfast will make people smarter. He gets 10 of his friends and divides them into 2 groups. Group A eats fish for breakfast every day for a week. Group B eats cereal for breakfast every day for a week. Both groups are given an I.Q. test at the end of the week.

- A. What is Bobby's hypothesis? \_\_\_\_\_
- B. What is the independent variable? \_\_\_\_\_
- C. What is the dependent variable? \_\_\_\_\_
- D. Which group is the control group? \_\_\_\_\_
- E. What are 2 things that are the same for both groups? \_\_\_\_\_

2. Define Biology

3. List the properties of life and describe them.

### Section 2: Biochemistry

4. Draw a water molecule. Label the hydrogen and oxygen atoms. Label the positive and negative charges.

5. Why is a water molecule considered polar?

6. Complete the chart below.

Compound	Monomer(s) (Building Block)	Function(s)	Examples
Carbohydrates			
Lipids			
Proteins			
Nucleic Acids			

7. All organic compounds contain which element. \_\_\_\_\_

8. Define the following terms. How are they important to living things?

A. cohesion

B. adhesion

C. solvent

D. high specific heat

9. Janet mixes purple Kool-Aid powder and water to make grape Kool-Aid.

A. What is the solvent? \_\_\_\_\_

B. What is the solute? \_\_\_\_\_

C. What is the solution? \_\_\_\_\_

10. What is the function of an enzyme?

11. Draw and label an enzyme, substrate, and active site.

12. Define substrate.

13. How are enzymes affected by

pH? \_\_\_\_\_

temperature? \_\_\_\_\_

enzyme concentration? \_\_\_\_\_

### Section 3: Cell Structure and Function

14. Make a Venn Diagram comparing and contrasting prokaryotes and eukaryotes.

15. Describe the 3 parts of the cell theory.

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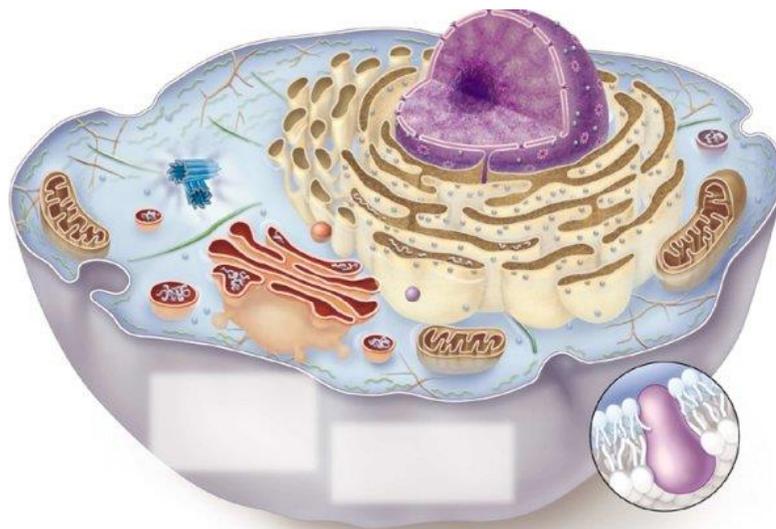
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16. Complete the chart below.

Cell Organelle	Functions	Found in Plant Cells, Animal Cells, or Both
Cell Wall		
Chloroplasts		
Cytoplasm		
Endoplasmic Reticulum		
Golgi Bodies		
Lysosomes		
Mitochondria		
Nucleolus		
Nucleus		
Plasma Membrane		
Ribosomes		
Vacuoles		

17. Label the cell's nucleus, nuclear envelope, nucleolus, mitochondria, cytoplasm, cell membrane, lysosome, endoplasmic reticulum, and golgi apparatus.



### Section 4: Cell Transport

18. Define the words, then draw a picture to represent each one.

Word	Definition	Drawing
Diffusion		
Osmosis		
Facilitated Diffusion		
Endocytosis		
Exocytosis		
Hypertonic		
Hypotonic		
Isotonic		

19. Draw the structure of a cell membrane. Label the lipid, phosphate, protein, and carbohydrate chain.

### Section 5: Cell Energy

20. Write the equation for cellular respiration.

21. What is the purpose of cellular respiration.

22. What process do organisms use to make energy if they do not have oxygen?

23. What is the difference between aerobic and anaerobic?

24. In what part of the cell does cellular respiration occur?

25. Write the equation for photosynthesis.

26. What is the purpose of photosynthesis?

27. In what part of the cell does photosynthesis occur?

Section 6: Mitosis & Meiosis

28. Define Interphase.

29. What are the 3 parts of Interphase and what happens in each one?

30. Define cytokinesis.

31. Write the phases of mitosis in order. Draw each phase.

32. Fill in the chart comparing mitosis and meiosis.

	<b>Mitosis</b>	<b>Meiosis</b>
What is the purpose?		
How many divisions are there?		
How many daughter cells are formed?		
Are the daughter cells identical to each other?		
Are the daughter cells haploid or diploid?		

33. Define

a. haploid

b. diploid

Section 7: DNA & RNA

34. What is the shape of DNA? Draw it.

35. Where is DNA located?

36. Describe 3 differences between DNA & RNA.

37. What are the 3 types of RNA and what do they do?

38. Complete the chart by giving the complementary DNA strand, the mRNA strand, and the amino acids.

complementary DNS									
<b>DNA</b>	<b>TAC</b>	<b>AAA</b>	<b>CCA</b>	<b>TTG</b>	<b>CGA</b>	<b>AAT</b>	<b>AGA</b>	<b>TGA</b>	<b>ATT</b>
mRNA									
Amino acid									

39. Define

- a. transcription
- b. translation

Section 8: Mendelian Genetics

40. Define heredity.

41. In pea plants green peas (*G*) are dominant to yellow peas (*g*).

Write the genotype for the following.

- A. homozygous dominant \_\_\_\_\_
- B. homozygous recessive \_\_\_\_\_
- C. heterozygous \_\_\_\_\_

Write the phenotype for the following.

- D. *Gg* \_\_\_\_\_
- E. homozygous recessive \_\_\_\_\_
- F. homozygous dominant \_\_\_\_\_

42. Draw a Punnett Square showing the cross between a homozygous dominant pea and a heterozygous pea.

43. Define the following terms and give an example of each one.

- A. incomplete dominance:
- B. codominance:
- C. multiple alleles:
- D. sex-linked trait:

44. What is genetic engineering?

45. Define cloning.

Section 9: Evolution & Classification

46. Define evolution.

47. List and describe the 4 parts of Darwin's theory.

48. Give an example that explains natural selection.

49. Define and give an example of each.

A. variation:

B. adaptation:

50. What was the early Earth like?

51. List the eight levels of taxonomy in order.

52. Use the dichotomous key to identify the organisms to the right.

- 1. Has pointed ears ..... go to 3  
Has rounded ears .....go to 2
- 2. Has no tail ..... Kentuckyus  
Has tail ..... Dakotus
- 3. Ears point upward ..... go to 5  
Ears point downward .....go to 4
- 4. Engages in waving behavior ..... Dallus  
Has hairy tufts on ears .....Californius
- 5. Engages in waving behavior ..... WalaWala  
Does not engage in waving behavior .....go to 6
- 6. Has hair on head ..... Beverlus  
Has no hair on head (may have ear tufts) .....go to 7
- 7. Has a tail ..... Yorkio  
Has no tail, aggressive ..... Rajus



53. List the 3 domains and what kingdoms belong to each domain.

54. Complete the chart.

<b>Kingdom</b>	<b>Cell Type: prokaryote or eukaryote</b>	<b>Cell Arrangement: unicellular or multicellular</b>	<b>Nutrition: autotroph or heterotroph</b>	<b>Cell Wall: present or absent</b>	<b>Example</b>
Eubacteria					
Archaeobacteria					
Protista					
Fungi					
Plantae					
Animalia					

Section 10: Ecology

55. Define

- A. biotic
- B. abiotic
- C. biodiversity
- D. limiting factor
- E. carrying capacity

56. What is the difference between primary and secondary succession?

57. Create a food web for the following. Fox, rabbit, snake, squirrel, mouse, corn, grass, grasshopper, bird.

- A. What are the producers?
- B. What trophic level is the grass on? The snake? The grasshopper?
- C. How much energy is passed from one trophic level to the next?
- D. What provides most of Earth's energy?

58. Draw a graph for exponential growth. Are there any limiting factors in this graph?

59. Draw a graph for logistic growth. Label carrying capacity. Are there any limiting factors in this graph?

60. What is a climax community?

61. What is the difference between an autotroph and heterotroph?

62. Describe the following relationships.

A. mutualism

B. commensalism

C. parasitism

63. Fill in the chart about biomes.

Biome	Climate	Plants	Animals
Desert			
Tropical Savanna			
Taiga/ Boreal (coniferous)			
Temperate Forest (deciduous)			
Tropical Rain Forest			
Tundra			