

## Biology STAAR EOC BIOLOGY STUDY GUIDE

### MAY 2<sup>nd</sup> IS THE BIOLOGY STAAR EOC TEST

- 1) Describe the difference between a theory and a hypothesis.
- 2) Define:
  - a. Independent variable
  - b. Dependent variable
  - c. Control
- 3) List the characteristics of living organisms.
- 4) With pictures define the symbiotic relationships.
  - a. Predation
  - b. Parasitism
  - c. Commensalism
  - d. Mutualism
- 5) How much energy is transferred between trophic levels in a food chain?
- 6) Describe what an arrow means in a food chain?
- 7) In an energy pyramid, where would producers be located?
- 8) How is a carrying capacity of an ecosystem affected?
- 9) Which organism is needed to turn nitrogen into a useable form?
- 10) When does secondary succession occur in nature?
- 11) Identify the organisms that would appear first in primary succession.
- 12) Define a climax community.
- 13) The monomer of carbohydrates are:
- 14) Which macromolecule is used for long-term energy storage, insulated the body and cushions organs?

- 15) This macromolecule contains the instructions for making proteins and the genetic information.
- 16) Enzymes are made from which macromolecule?
- 17) Cell wall in plants is made from which macromolecule?
- 18) When we did the Food nutrients Lab, Lugol's Iodine was used to indicate which substance?
- 19) Draw and label the enzyme-substrate complex.
- 20) What happens if enzymes are exposed to extreme temperatures?
- 21) Describe how enzymes work.
- 22) Where does the substrate bind?
- 23) Define denature.
- 24) What is a cell and why is it called the basic unit of structure and function?
- 25) Who was the first person to describe cells? And what did he observe?
- 26) List the 3 parts of the cell theory.
- 27) Describe the difference between prokaryotic and eukaryotic.
- 28) Describe what each of the organelles do in a cell;
  - a. Ribosomes
  - b. Chloroplasts
  - c. Golgi Apparatus

- d. Lysosomes
  - e. Mitochondria
  - f. Nucleus
  - g. Vacuole
- 29) Identify the difference between a plant cell and an animal cell.
- 30) Define Diffusion:
- 31) Identify what happens in osmosis.
- 32) Describe the structure of the cell membrane.
- 33) In your own words what does the term homeostasis mean?
- 34) How does the structure of the cell membrane help maintain homeostasis?
- 35) Does passive transport require energy to move a substance across the cell membrane?
- 36) Define the key terms
- a. Hypo -
  - b. Hyper-
  - c. Iso
- 37) Draw a picture illustrating the 3 types of solutions.
- a. Hypertonic                      b. Hypotonic                      c. Isotonic**
- 38) What does the term plasmolysis mean?
- 39) Write the chemical equation for photosynthesis.
- 40) Describe what occurs during photosynthesis.

- 41) Where does photosynthesis occur?
- 42) Identify what happens during the light-dependent reaction.
- 43) The light independent reaction is also known as the Calvin Cycle, describe where and what occurs during this reaction.
- 44) Where does cellular respiration occur in cells?
- 45) How is the cellular respiration equation compared to the photosynthesis equation?
- 46) Name the 3 parts of cellular respiration and where they occur?
- 47) What is created during the Krebs cycle that is so important for the electron transport chain?
- 48) How many ATP are created during:  
a. Glycolysis  
b. Krebs Cycle  
c. Electron Transport Chain
- 49) Identify the 2 types of Nucleic Acids.
- 50) A nucleotide is made up of what 3 parts:
- 51) DNA was discovered by whom? And who was actually given the Nobel Prize for it?
- 52) List the 4 nitrogenous bases and which ones pair together.

- 53) Which bases are:  
 a. Purines  
 b. Pyrimidines
- 54) Explain why cells need to be able to replicate DNA.
- 55) Compare RNA and DNA

	<b>Bases</b>	<b>Sugar</b>	<b>Location</b>	<b>Types</b>
<b>DNA</b>				
<b>RNA</b>				

- 56) Describe what happens during Transcription.
- 57) Identify what happens during Translation.
- 58) List in order all parts of the Cell Cycle.
- 59) If something goes wrong in the Replication of DNA in which part of the cell cycle should it be corrected before the cell moves on and divides?
- 60) During which phase of mitosis do the chromosomes line up in the center of the cell?
- 61) During which phase of mitosis does the nuclear membrane disappear and the chromosomes start to condense and become visible?
- 62) Name the phase that the sister chromatids are being pulled apart toward the opposite poles.

- 63) How many chromosomes does a human body cell have?
- 64) Define somatic cells:
- 65) Explain how the cell theory is supported by mitosis.
- 66) How would a karyotype help if you were pregnant and wanted to know if your child had a genetic disorder?
- 67) Mitosis results in 2 \_\_\_\_\_ cells.
- 68) Explain what occurs during cytokinesis.
- 69) What happens in a cancer cell that is different than in a normal cell?
- 70) Explain the purpose of each of the genes below:  
a. Proto-oncogenes  
b. Tumor suppressor genes
- 71) In each of your cells how much of the DNA is the same?
- 72) What causes cells with the same DNA to differentiate?
- 73) What causes changes in epigenetics?
- 74) Cells with the exact same DNA are directed to differentiate by chemical signals that causes certain genes to be:
- 75) Define the following:  
a. Exon:  
b. Intron:
- 76) Define gametes:
- 77) Meiosis results in =
- 78) Explain what occurs during crossing over in Meiosis?
- 79) Which phase of Meiosis do pairs of homologous chromosomes move to equator?

80) Identify the phase in which nuclear membrane reforms, cytoplasm divides and 4 daughter cells are formed.

81) Compare mitosis & meiosis:

	Mitosis	Meiosis
In what type of cell does the division take place?		
How many divisions are there?		
How many daughter cells are produced?		
How many chromosomes are produced?		
Are the daughter cells identical or different to the parent cell?		
Does crossing over occur?		

82) Define the following terms:

- a. Phenotype:
- b. Genotype:
- c. Homozygous:
- d. Heterozygous:
- e. Dominant:
- f. Recessive:

83) Create a Punnett square for the following:

**B = brown eyes      b = blue eyes**

A heterozygous father has children with a homozygous recessive mother.

Genotypes:

Phenotypes:





- 94) Structures that have the same function but no evolutionary relationship such as butterfly wing and bird wing are called:
- 95) How is embryology evidence of evolution?
- 96) List in order the hierarchy of taxonomy from broadest to most specific starting with kingdom.
- 97) Binomial nomenclature uses what to name species?
- 98) The arrangement of organisms into orderly groups based on their similarities is known as:
- 99) Identify the 6 kingdoms:
- 100) Identify the kingdom that has organisms that have a cell wall made up of chitin.
- 101) This kingdom that contains organisms that are thought to be the first life forms on earth:
- 102) This kingdom contains organisms that can be either unicellular or multicellular and they can either be autotrophic or heterotrophic.
- 103) This kingdom is multicellular, heterotrophic organisms that feed on plants and animals.
- 104) This kingdom contains organisms that are found almost every where on earth and cause most human diseases.
- 105) Explain how you use a dichotomous key.
- 106) Explain why viruses are considered nonliving.
- 107) List the main parts of a virus.
- 108) Why can you not use antibiotics on a viral infection?
- 109) Explain the lytic cycle.

- 110) How is the lysogenic cycle different than the lytic cycle?
- 111) Do viruses mutate?
- 112) Are viruses host cell specific?
- 113) Identify the shapes of bacteria.
- 114) Why are bacteria important to the ecosystem? (name 2)
- 115) How do bacteria reproduce?
- 116) Give examples of gymnosperms.
- 117) How do gymnosperms reproduce?
- 118) Give an example of angiosperms.
- 119) How do angiosperm plants reproduce?
- 120) Define the following:  
a. Monocot:  
b. Dicot:
- 121) What is the difference between xylem and phloem?
- 122) Why do some plants have thorns or are poisonous?
- 123) How are seeds dispersed?
- 124) How is pollination different for gymnosperms and angiosperms?
- 125) Draw and label the reproductive parts of a flower. (include both male and female parts)