– KEY –

a.

Scientific Method and Biological Molecules – Chapter Review Sheet (homework = study for exam)

Study notes, book work and past worksheets.

Scientific Method

1. What are the steps of the scientific method?

observe, research, problem / hypothesis, experiment / test, collect data, analyze, conclude

2. What is the independent variable?

< variable that changes / tested

3. What is the dependent variable?

< variable that is measured

4. What is the difference between the control and experimental group?

control does not have the independent variable applied to it

Nutrients

5. What is an element?

a pure chemical substance → one type of atom

6. What element is found in all living things? C (H, N, O, P, S)

carbon is the only element in all

7. What is a nutrient?

substance that provides nourishment essential for growth + function

8. How does Water cycle through biotic and abiotic environment?

precipitation, evaporation, transpiration

9. How does Carbon cycle through biotic and abiotic environment?

CO_2 (gas) → photosynthesis → sugars / starch → Food Web → respiration + decomposition

10. How does Nitrogen cycle through biotic and abiotic environment?

N_2 (gas) → lightening or Nit. Fixing Bacteria or Fertilizer → NH_4, NH_3, NO_2 → plants → animals → denitrification

11. What is the difference between an element and a molecule?

elements come together to make molecules

12. What is the difference between a molecule and a cell?

molecules make up cells!

13. What is stated in the cell theory?

all living things are made up of cells; cells are the basic unit of life; cells come from pre-existing cells

Organic Molecules

14. What is the significance of carbon in organic molecules?

carbon is the only element in all living things; it is the backbone of all molecules

15. What are the six most common elements in organic molecules?

C, H, N, O, P, S

16. What are the four major categories of organic molecules?

Proteins, Nucleic Acids, Carbs, Lipids

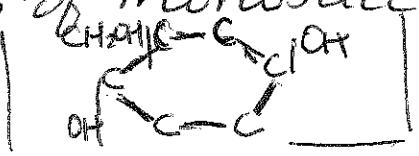
17. Use the information on biological molecules in helping with answering the questions that follow.

Carbohydrates, fats, and proteins all may be used as sources of energy. The body breaks down these polymers into their simple monomer makeup. For example, fats are separated into glycerol and fatty acids; and proteins are broken down into amino acids. The monomers are used in the body for cellular processes.

Carbohydrates and fats are primary sources of energy. Carbohydrates are considered to provide "quick energy" and lipids are a concentrated (slow) source of food energy. Proteins supply the body with building materials and

enzymes and help the body with repair and maintenance of body tissues, as well as for normal growth and development. Nucleic Acids (the fourth major organic molecules) provide the code that is held in DNA and RNA.

18. Describe the composition of a carbohydrate. Draw an example of a carbohydrate in the space provided. carbs are generally circle chains of C, H, O they are made up of monosaccharides



19. Polysaccharides are polymers of carbohydrates and monosaccharides are the monomers that make up a carbohydrate.

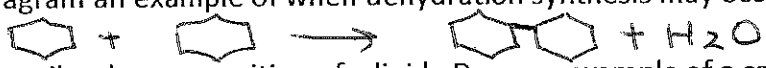
20. Carbohydrates are a good source of quick energy (Glucose is used in cellular resp. to make ATP)

21. Give an example of a type of food that is a good source of carbohydrate: bread, potato, pasta

22. How does dehydration synthesis relate to organic molecules? Dehydration Synthesis is how polymers are made from monomers

23. What occurs during hydrolysis? Water is removed from the monomers & they bond together as a result Hydrolysis is the addition of water to break apart polymers

24. Diagram an example of when dehydration synthesis may occur:



25. Describe the composition of a lipid. Draw an example of a carbohydrate in the space provided. Lipids are long lines of carbon, hydrogen, oxygen they are made of fatty acids + glycerol.

26. What are the two components that make up a lipid?. "glycerol + fatty acid

27. Where are lipids found in the cell? in the cell membrane

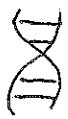
28. Carbohydrates are a good source of quick energy / Lipids are a good source of long term energy

29. Give an example of a type of food that is a good source of lipid: butter, olive oil

30. What are saturated fats? Are they good for you? And what types of foods contain them? Solid at rm temp; they are not as good for you; meat fats + butter

31. What are unsaturated fats? Are the good for you? And what types of foods contain them? Liquids at RM temp / less H; they are good for you; olive oil Peanut oil

32. Describe the composition of a nucleic acid. Draw an example of a nucleic acid in the space provided. nucleotides (Sugar / Phosphate / Nit. Base)



33. Nucleotides make up nucleic acids. They combine to make DNA and RNA.

34. What is the function of nucleic acids? store genetic information which is used to make proteins in the cell!