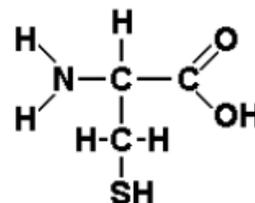


Chemistry of Life Review Worksheet

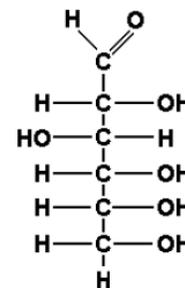
- Differentiate between an **ionic** and **covalent** bond. Provide an example for each.
- Define the term **electronegativity**. What does a large electronegativity number represent?
- Hydrogen bonds form between which atoms?
- Define the terms **hydrophobic** and **hydrophilic**.
- Differentiate between an acid and a *base*.
- Explain why functional groups are important.
- Draw each of the following functional groups:
 - Carbonyl(aldehyde)
 - Carbonyl(ketone)
 - Amino
 - Carboxyl
 - Hydroxyl
 - Phosphate
- Which organic compound(s)/macromolecules are the following functional groups associated with?
 - Phosphate
 - Carboxyl
 - Hydroxyl

9. How many functional groups can you identify in the compound to the right?
Circle and identify each group.

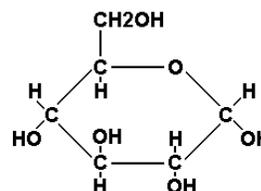


10. What is the name of the compound in question 9?

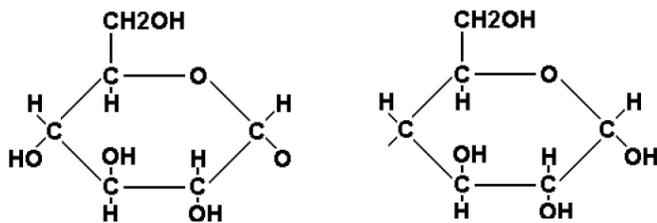
11. What functional groups can you identify in the compound to the right?
Circle and label them and then name the compound.



12. What kind of organic compound is shown below? What functional groups can you identify? Circle and label one of them.



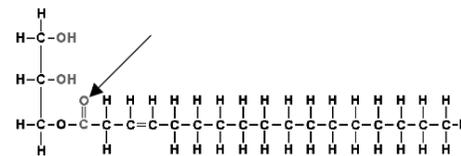
13. Two of the above compounds are being linked together in the diagram below to form what new compound?
Complete the bond that joins these two compounds together. What type of linkage connects these two compounds together?



- What are the products of this reaction?
- What is the name given to this type of reaction?

14. Name four examples of polysaccharides and state their primary function.

15. What functional groups are found in lipids, such as the one found to the right? Circle and identify each group.



16. What is the name of the bond indicated by the arrow in the lipid above?

17. What type of fatty acid is shown in the lipid above?

18. How would a polyunsaturated fatty acid differ?

19. How would a saturated fatty acid differ?

20. If the lipid above was a triglyceride, how many fatty acids would be linked to the glycerol?

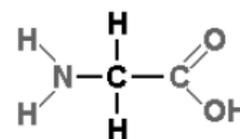
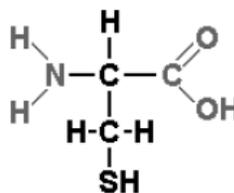
21. If the lipid above was a phospholipid, how many fatty acids would be linked to the glycerol and what additional group(s) would be present in the molecule?

22. What type of reaction would occur to link each fatty acid to the glycerol?

23. List the different types of lipids and state each of their functions.

24. When a person goes on a diet, stored lipids begin to be digested. What happens chemically when the lipids are digested (broken down)? What is the name given to this process?

25. What type of compound is shown to the right?



26. What functional groups are present in both of the compounds found in question 26?

Circle and label all of the functional groups visible.

27. Describe what would have to occur to link the two compounds together. What substance is removed (produced)?

28. What is the name of the bond this is formed between these two compounds?

29. List several functions of proteins.

30. Explain what is meant by a protein's primary structure, secondary structure, tertiary structure and quaternary structure.

31. What does a nucleotide consist of?

32. What are the five nitrogenous bases found in nucleic acids?

33. Differentiate between DNA and RNA.

34. What type of bonds hold the sugar phosphate backbone of DNA & RNA together?

35. What type of bonds hold the nitrogenous bases of DNA together?

36. What is ATP?