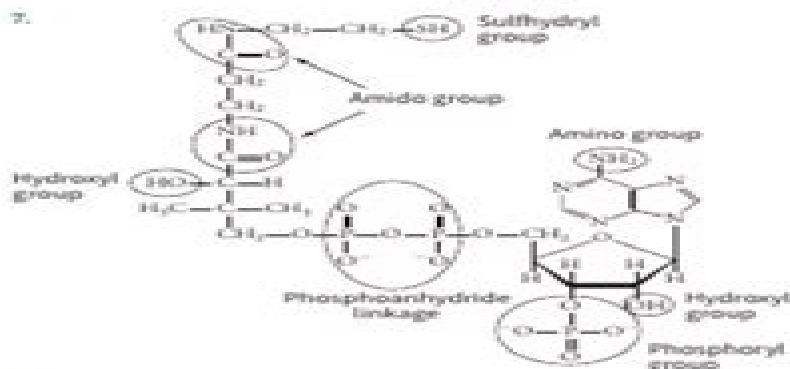
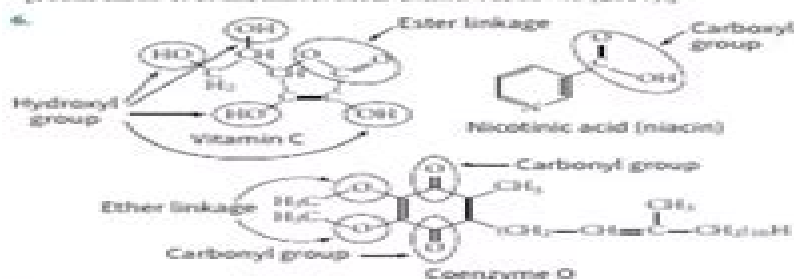


## Chapter 1

1. a. carboxylic acid; b. amine; c. ester; d. alcohol.
2. a. ether; b. phosphoric acid ester; c. thiol; d. ketone.
3. a. aldehyde; b. imine; c. thioester; d. diphosphoric acid.
4. a. alcohol; b. aldehyde; c. carboxylic acid.
- 5.



[From Li, S.-Y. et al., *Eur. J. Med. Chem.* 71, 36–45 (2014).]



6. A thioester linkage is formed.
9. Amino acids, monosaccharides, nucleotides, and lipids are the four types of biological small molecules. Amino acids, monosaccharides, and nucleotides can form polymers of proteins, polysaccharides, and nucleic acids, respectively.
10. a. *N*-Acetylglucosamine is a monosaccharide. b. CMP is a nucleotide. c. Homocysteine is an amino acid. d. Cholesteryl ester is a lipid.

11. a. 11-Cyclohexylundecanoate is a lipid. b. Selenocysteine is an amino acid. c. Galactose is a monosaccharide. d. *O*<sup>6</sup>-Methylguanosine monophosphate is a nucleotide.

12. The compound contains both a lipid and a monosaccharide. [From Malyarenko, T.V. et al., *Molecules* 23, 1077 (2018).]

13. a. C and H plus some O. b. C, H, and O. c. C, H, O, and N plus small amounts of S.

14. It is a lipid (it is actually lecithin). It is mostly C and H, with relatively little O and only one N and one P. It has too little O to be a carbohydrate, too little N to be a protein, and too little P to be a nucleic acid.

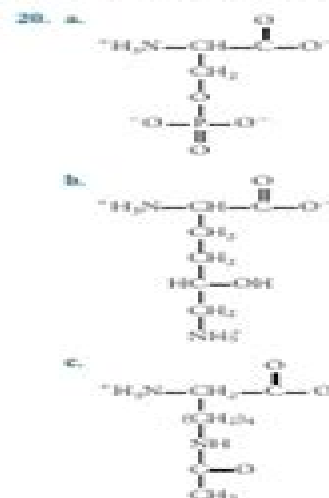
15. You should measure the nitrogen content, since this would indicate the presence of protein (neither lipids nor carbohydrates contain appreciable amounts of nitrogen).

16. You could add the compound that contains the most nitrogen, compound B, which is melamine. (Melamine is a substance that in the past was added to some pet foods and milk products from China so that they would appear to contain more protein. Melamine is toxic to pets and children.) Compound C is an amino acid, so it would already be present in protein-containing food.

17. A diet high in protein results in a high urea concentration, since urea is the body's method of ridding itself of extra nitrogen. Nitrogen is found in proteins but is not found in significant amounts in lipids or carbohydrates. A low-protein diet provides the patient with just enough protein for tissue repair and growth. In the absence of excess protein consumption, urea production decreases, and this puts less strain on the patient's weakened kidneys.

18. Asn has an amide group and Cys has a sulfhydryl group.

19. Serine has a hydroxyl group and lysine does not.



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**M Woodhall**



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this example shows how to use simulink design optimization to tune an all pass filter of a phase lock loop the filter includes a second order low pass filter and a feedthrough gain the feedthrough gain and the second order filter coefficients are tuned to apply a steady state input to the voltage controlled oscillator vco

*digital phase locked loop simulink pdf analytics mirowin* - Jun 04 2022

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**a simulink model for all digital phase locked loop** - Mar 13 2023

a simulink model for all digital phase locked loop abstract a simulink model for all digital phase locked look adpll is proposed in this paper the study is based on adpll implemented in an all digital rf transceiver simulation results in simulink give the performance overview of the adpll

**digital phase locked loop matlab simulink digital phase locked loops** - Oct 08 2022

this example shows how on model a electronic phase locks loop using the mixed signal blockset