

CHEM 102-002 Practice TEST III

This practice test is meant to suggest the types of questions and content to be covered. It is not meant to be all inclusive of either. Please let me know of any errors that you find.

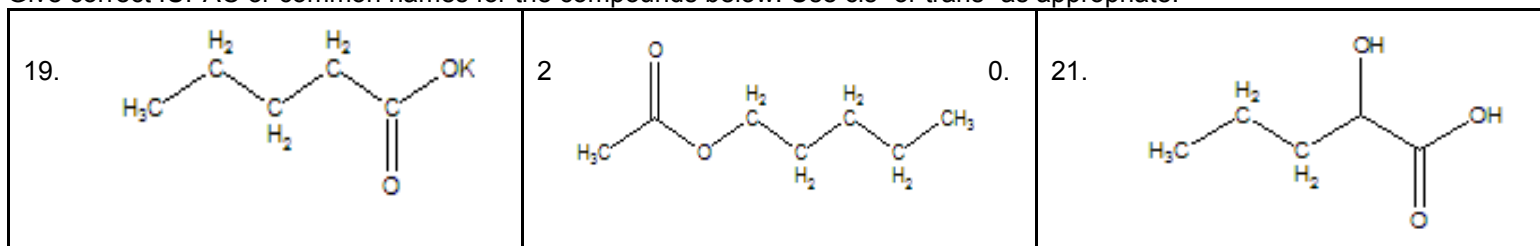
MULTIPLE CHOICE. Circle the letter to the left of each question that corresponds to the best response.

1. Mutarotation of glucose can occur in solution because the α - and β - anomers are
a) identical b) superimposable c) in equilibrium with open-chain glucose d) enantiomers
2. A glycosidic bond between two monosaccharides can also be classified as a(n)
a) double b) anomeric c) ether d) ester
3. The active ingredient in vinegar is
a) formic acid b) acetic acid c) acetone d) chloral hydrate
4. Which of the following is *beta* linked polysaccharide?
a) amylose b) amylopectin c) cellulose d) glycogen
5. The complete hydrolysis of all polysaccharides produces
a) amylose b) glycerol c) galactose d) glucose
6. Iodine reacts with what class of compounds to give a blue-black complex?
a) cellulose b) disaccharides c) monosaccharides d) starch
7. A carboxylic acid is prepared from an aldehyde by
a) hydrolysis b) hydrogenation c) oxidation d) reduction
8. Many of the fragrances of flowers and the flavors of fruits are due to
a) acetals b) carboxylic acids c) esters d) ethers
9. The reaction of an ester with NaOH is known as
a) esterification b) neutralization c) oxidation d) saponification
10. The irritating acid found in ant and bee stings is
a) acetic acid b) benzoic acid c) butyric acid d) formic acid
11. Which of the following is *not* a function of lipids in the body?
a) energy storage b) insulation c) cell membrane component d) pH regulation
12. A polyunsaturated fatty acid contains more than one
a) carbon-carbon double bond b) carboxyl group c) carbonyl group d) hydroxyl group
13. A fat or oil becomes rancid when it is
a) hydrogenated b) hydrolyzed c) oxidized d) saponified
14. Which of the following is a steroid?
a) bees wax b) capric acid c) cerebroside d) estrogen
15. Lipids are all
a) acids b) saponifiable c) esters d) water insoluble

Circle the compound below out of ***each pair*** that has the ***higher*** boiling point.

16.	1-pentanal	or	butanoic acid
17.	ethyl acetate	or	1-pentanol
18.	2-hydroxybutanoic acid	or	2-pentanone

Give correct IUPAC or common names for the compounds below. Use cis- or trans- as appropriate.

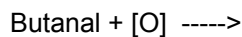


22. Draw the correct structure for ethyl benzoate

OXIDATION-REDUCTION. For each of the pairs of compounds below, circle the structure that is the **REDUCED** species of that pair.

23.	2-butanone or 2-butanol
24.	butanal or butanoic acid

25. Circle the letter representing the correct products for the reaction below.



- a) 1-butanol b) butanoic acid c) 1-butoxybutane d) butyl butanoate

26. The preceding reaction is best described as a(n)

- a) addition b) esterification c) hydrolysis d) neutralization e) oxidation
 f) reduction g) saponification

27. Circle the letter representing the correct products for the reaction below.



- a) butyl propanoate b) 2-propoxybutane c) propyl butanoate d) 2-propoxy-2-butanol

28. The preceding reaction is best described as a(n)

- a) addition e) oxidation
 b) esterification f) reduction
 c) hydrolysis g) saponification
 d) neutralization

29. Circle the letter representing the correct products for the reaction below.



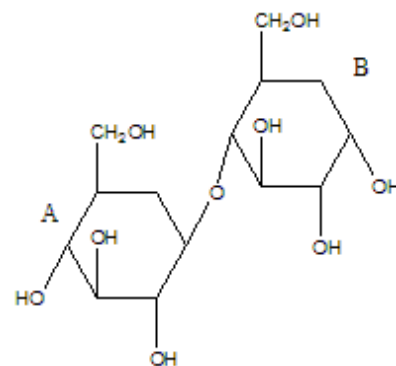
- a) heptanoic acid b) ethanol + sodium pentanoate c) 1-pentanol + sodium acetate d) heptanal

30. The preceding reaction is best described as a(n)

- a) addition e) oxidation
 b) esterification f) reduction
 c) hydrolysis g) saponification
 d) neutralization

For the disaccharide depicted to the right:

31. To which family does the ring marked "A" belong
 a) aldohexose b) aldopentose c) ketohexose d) ketopentose
32. The anomeric carbon in ring "A" is a(n)
 a) hemiacetal b) ester c) acetal
33. To which family does the ring marked "B" belong
 a) aldohexose b) aldopentose c) ketohexose d) ketopentose
34. The anomeric carbon in ring "B" is a(n)
 a) hemiacetal b) acetal c) neither an acetal nor a hemiacetal
35. What sugars are produced upon hydrolysis of this disaccharide?
 a) glucose b) glucose and galactose c) galactose only d) glucose and fructose
36. Draw an arrow (6) to **all** glycosidic bonds (if present) and denote whether it is α or β . If none, write a zero here: _____
37. Draw a star (*) next to each anomeric carbon.
38. Is this sugar?
 a) non reducing b) reducing



<p>A.</p>	<p>B.</p>
<p>D.</p>	<p>E.</p>
<p>F.</p>	<p>G.</p>

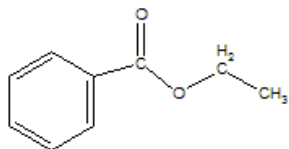
Match the names below to the structures above.

39. _____ PETE
 40. _____ a wax
 41. _____ PABA
 42. _____ Fructose
 43. _____ Estradiol

ANSWER KEY

1. c) in equilibrium with open-chain glucose
2. c) ether
3. b) acetic acid
4. c) cellulose
5. d) glucose
6. d) starch
7. c) oxidation
8. c) esters
9. d) saponification
10. d) formic acid
11. d) pH regulation
12. a) carbon-carbon double bond
13. c) oxidized
14. d) estrogen
15. d) water insoluble
16. butanoic acid
17. 1-pentanol
18. 2-hydroxybutanoic acid
19. Potassium pentanoate
20. Pentyl acetate
21. 2-hydroxypentanoic acid

22.



23. 2-butanol
24. butanal
25. b) butanoic acid
26. e) oxidation
27. a) butyl propanoate
28. b) esterification
29. b) ethanol + sodium pentanoate
30. g) saponification
31. a) aldohexose
32. c) acetal
33. a) aldohexose
34. a) hemiacetal
35. a) glucose
36. β

37.

38. b) reducing

39. D PETE
40. G a wax
41. E PABA
42. B Fructose
43. A Estradiol

