Org/Biochem Sp 2011, Test#1A

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) All of the following statements are general properties of organic compounds except 1) _____
A) they have relatively low boiling points.
B) they have limited or no water solubility.
C) they have relatively low melting points.
D) the bonds are covalent.
E) they usually behave as electrolytes in solution.

2) Which family of organic molecules is a hydrocarbon? 2) _____
A) aromatic B) amine C) alcohol D) amide E) aldehyde

3) The functional group illustrated by R—OH is an 3) _____
A) alkyl. B) alcohol. C) aldehyde. D) ether. E) ester.

4) Which of the following statements about alkyl groups is incorrect? 4) _____
A) In naming, they are used as prefixes and have a "yl" ending.
B) $-C_2H_5$ is an example.
C) An alkyl group with four carbon atoms would include butyl in its name.
D) They are derived from alkenes.
E) none of the above

5) The alkyne functional group is 5) _____
A) a carbon-carbon triple bond.
B) a double bond between carbon and oxygen.
C) one or more bonds between carbon and nitrogen.
D) a carbon-oxygen-hydrogen group.
E) a six-membered ring with three double bonds.

6) Which group is the best description of the properties of alkanes? 6) _____
A) non-flammable, polar, reactive
B) flammable, non-reactive, insoluble in water
C) non-flammable, non-polar, water soluble
D) flammable, reactive, water soluble
E) none of the above

7) When hydrocarbons undergo complete combustion, the product(s) is(are) 7) _____
A) H_2O.
B) CO_2 and O_2.
C) H_2O and O_2.
D) CO_2 and H_2O.
E) CO_2.

8) In organic chemistry, the term unsaturated means a molecule 8) _____
A) which contains one or more multiple bonds between carbon atoms.
B) which can react by taking up one or more water molecules.
C) with a specific six-membered ring structure.
D) which has the maximum number of carbon-hydrogen bonds possible.
E) which is formed from many smaller molecules.

9) The cause of cis-trans isomerism is 9) _____
A) vibration of the double bond.
B) short length of the double bond.
C) strength of the double bond.
D) lack of rotation of the double bond.
E) stability of the double bond.

10) All of the following are general properties of alkenes except 10) _____
A) flammable.
B) low boiling points.
C) soluble in non-polar (organic) solvents.
D) may exist as cis-trans isomers.
E) less reactive than the corresponding alkanes.

11) The bond angle about a carbon atom involved in a triple bond is 11) _____
A) 90°. B) 109.5°. C) 105°. D) 180°. E) 120°.

12) Which of the following is not the common name of an aromatic compound? 12) _____
A) toluene B) xylene C) phenol D) aniline E) acetone

13) The name of the polymer formed from $CH_2=CH_2$ is 13) _____
A) polypropylene.
B) polyethylene.
C) polystyrene.
D) polyvinyl chloride.
E) none of the above

14) The monomer unit used to produce polypropylene is 14) _____
A) $CH_2=CHCH_2Cl$.
B) $CH_2=CH_2$.
C) $CH_3CH_2CH_2CH_3$.
D) $CH_2=CHCH_3$.
E) $CHCl=CH_2$.

15) Alcohols, ethers, and phenols can be considered organic derivatives of the inorganic compound 15) _____
A) sodium hydroxide.
B) carbon dioxide.
C) ammonia.
D) water.
E) none of these

16) The alcohol which contains only one carbon atom and has the common name of wood alcohol is 16) _____
A) methanol. B) glycol. C) phenol. D) ethanol. E) glycerol.

17) Rubbing alcohol is composed of 17) _____
A) methanol.
B) ethylene glycol.
C) glycerol.
D) isopropyl alcohol.
E) ethanol.

18) The relatively high boiling point of alcohols in relation to their molecular weights is the result of 18) _____
A) London forces.
B) covalent bonding.
C) ionic bonding.
D) hydrogen bonding.
E) dipolar forces.

19) Which compound would you expect to have the lowest boiling point? 19) _____
A) methane
B) water
C) ethanol
D) methanol
E) dimethyl ether

20) Treatment of $CH_3CH_2CH_2OH$ with a limited amount of oxidizing agent will produce 20) _____
A) no reaction.
B) an aldehyde.
C) a ketone.
D) a carboxylic acid.
E) an alkene.

21) Oxidation of R_2CHOH will produce 21) _____
A) a carboxylic acid.
B) an alkene.
C) a ketone.
D) no reaction.
E) an aldehyde.

22) The major product obtained from dehydration of 2-hexanol is 22) _____
A) 2-hexanal.
B) 2-hexene.
C) 1-hexene.
D) 2-hexanone.
E) 3-hexene.

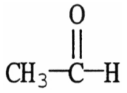
23) Ether molecules are polar, but do not form hydrogen bonds with other ether molecules because 23) _____
A) there is no hydrogen atom bonded to the oxygen.
B) only binary compounds form hydrogen bonds.
C) ether molecules are so reactive that they never have an opportunity to form hydrogen bonds.
D) the molecules are generally too large.
E) there are too many hydrogen atoms on the molecules to bond with just one oxygen atom.

24) Which property of thiols makes them useful as additives to natural gas? 24) _____

A) color
B) odor
C) disinfectant
D) solubility
E) flammability

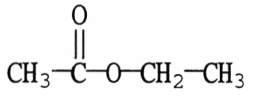
25) Which molecule is formaldehyde? 25) _____

A)

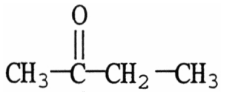


B)

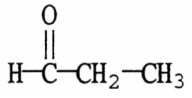
C)



D)



E)



26) The IUPAC name for acetone is 26) _____

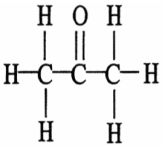
A) 2-propanone.
B) dimethyl ketone.
C) 3-propanal.
D) 2-propanal.
E) 1-propanone.

27) Which of the following is a use of formaldehyde? 27) _____

A) preservative
B) solvent
C) flavoring
D) sweetener
E) hormone

28) All of the following are true concerning a three-carbon ketone except 28) _____

A) Its condensed formula is $CH_3—CO—CH_3$.
B) Its common name is acetone.
C) Another acceptable name is methyl ethyl ketone.
D) Its systematic name is propanone.
E) Its structural formula is:



29) Oxidation of a ketone produces 29) _____

A) a carboxylic acid.
B) a primary alcohol.
C) no reaction.
D) an aldehyde.
E) a secondary alcohol.

30) Reduction of a ketone produces a(an) 30) _____

A) tertiary alcohol.
B) aldehyde.
C) secondary alcohol.
D) primary alcohol.
E) carboxylic acid.