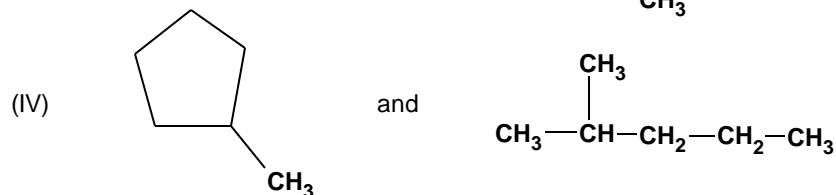
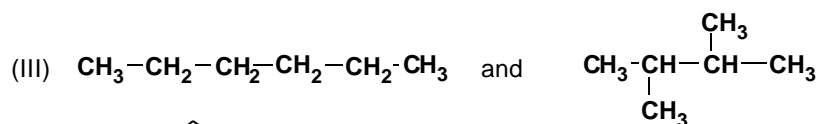
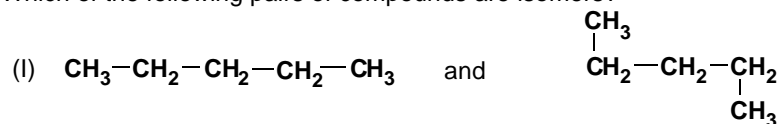


Multiple Choice. Put the letter corresponding to the correct answer in the space provided. (2 points)

___1) Which of the following is an organic compound?

- (a) NaCl (b) K₂CrO₇ (c) KMnO₄ (d) C₂H₆ (e) CaCl₂

___2) Which of the following pairs of compounds are isomers?

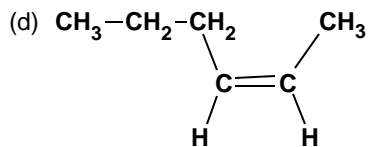
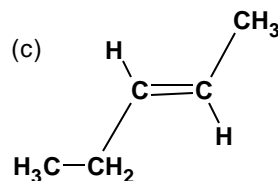
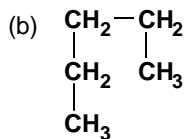
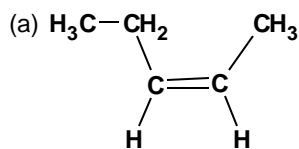


- (a) I and II (b) I and III (c) II and IV (d) II and III (e) I, II, III, and IV

___3) Which of the following is true of CH₃CH₂CH₂CH₂CH₂CH₂CH₂CH₂CH₂CH₃?

- (a) is not combustible (b) soluble in water
(c) liquid at room temperature (d) is an alkene

___4) Which is the correct structure of cis-2-pentene?



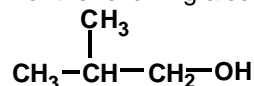
- (e) None of these structures is correct

Name _____

___5) What causes Fetal Alcohol Syndrome?

- (a) genetic defect (b) inherited disorder (c) drinking alcohol while pregnant
(d) eating charred meat (e) all of the above

___6) The classification of the following alcohol is



- (a) primary, 1° (b) secondary, 2° (c) tertiary, 3°
(d) both secondary and tertiary (e) the alcohol cannot be classified

___7) The correct balanced equation for the combustion of C_4H_{10} is

- (a) $2 \text{C}_4\text{H}_{10} + 13 \text{O}_2 \xrightarrow{\text{flame/spark}} 8 \text{CO}_2 + 10 \text{H}_2\text{O}$
(b) $\text{C}_4\text{H}_{10} + 6 \text{O}_2 \xrightarrow{\text{flame/spark}} 4 \text{CO}_2 + 5 \text{H}_2\text{O}$
(c) $\text{C}_4\text{H}_{10} + 13 \text{O}_2 \xrightarrow{\text{flame/spark}} 8 \text{CO}_2 + 10 \text{H}_2\text{O}$
(d) $2 \text{C}_4\text{H}_{10} + 6 \text{O}_2 \xrightarrow{\text{flame/spark}} 4 \text{CO}_2 + 5 \text{H}_2\text{O}$
(e) none of the above

___8) Why is a flame or spark necessary in a combustion reaction?

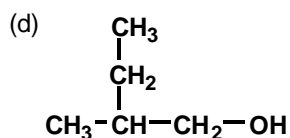
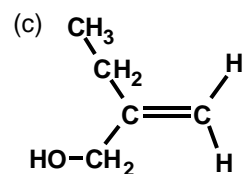
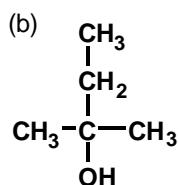
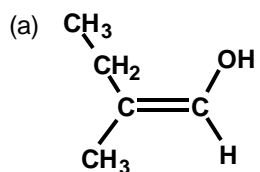
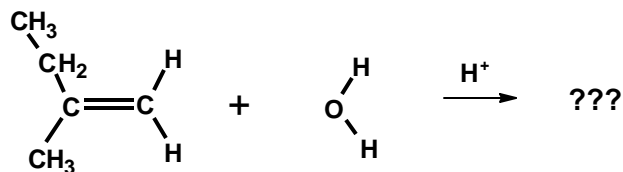
- (a) So you can see what you are doing (b) it provides oxygen to the reaction
(c) it provides energy to start the reaction (d) it removes carbon monoxide byproduct
(e) it is NOT necessary in a combustion reaction

___9) When ingested, which of the following alcohols produces a product whose calcium salt deposits in the kidneys, ultimately causing death?

- (a) ethanol (b) methanol (c) 2-propanol (aka: isopropyl alcohol)
(d) 2,3-ethanediol (aka: ethylene glycol) (e) 1,2,3-propanetriol (aka: glycerol)

Name _____

___10) Which is the correct product of the following reaction?



(e) None of the above

___11) Unsaturated compounds MUST contain

- (a) at least 5 carbons (b) only single bonds (c) at least one double bond
 (d) a carbonyl group (e) none of the above

___12) For organic compounds, an oxidation reaction is indicated by

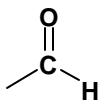
- (a) a decrease in the number of bonds to carbon
 (b) an increase in the number of bonds to oxygen
 (c) an increase in the number of bonds to hydrogen
 (d) a decrease in the number of bonds to oxygen
 (e) none of the above

___13) What is the name of the enzyme responsible for alcohol metabolism in the human body?

- (a) Alcohol Removase (b) Ethanol Dehydrogenase (c) Alcohol Reductase
 (d) Methanol Dehydrogenase (e) none of the above

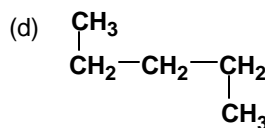
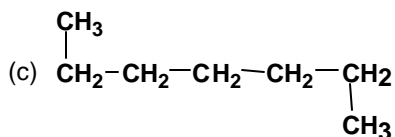
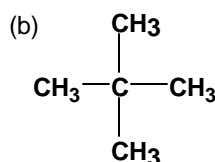
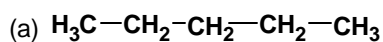
Name _____

___14) Which of the following class of compounds must have the following functional group?



- (a) aldehyde (b) ketone (c) alcohol (d) alkene
(e) alkane

___15) Which of the following compounds will have the highest boiling point?

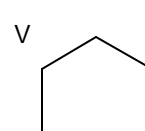
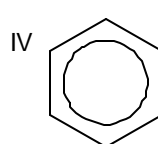
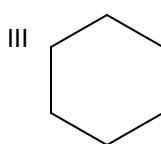
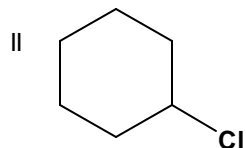
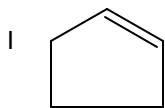


(e) None of these compounds have boiling points. They are all gases at room temperature.

___16) Which of the following compounds has cis and trans isomers?

- (a) $\text{H}_2\text{C}=\text{CH}_2$ (b) $\text{H}_3\text{C}-\text{CH}=\text{CH}-\text{CH}_3$ (c) $\text{H}_2\text{C}=\text{CH}-\text{CH}_2-\text{CH}_3$
(d) $\text{CH}_3-\text{CH}=\text{CH}_2$ (e) None of the above

___17) Which of the following compounds will react with a solution of Br_2 without a catalyst?



- (a) I only (b) IV only (c) I and IV (d) II, III, and IV (e) none will react without a catalyst.

___18) Hydrocarbons with triple bonds are called _____ Name_____

- (a) alkanes (b) alkenes (c) alkynes (d) carbonyls (e) none of the above

___19) What would be the name of the product of the following reaction?

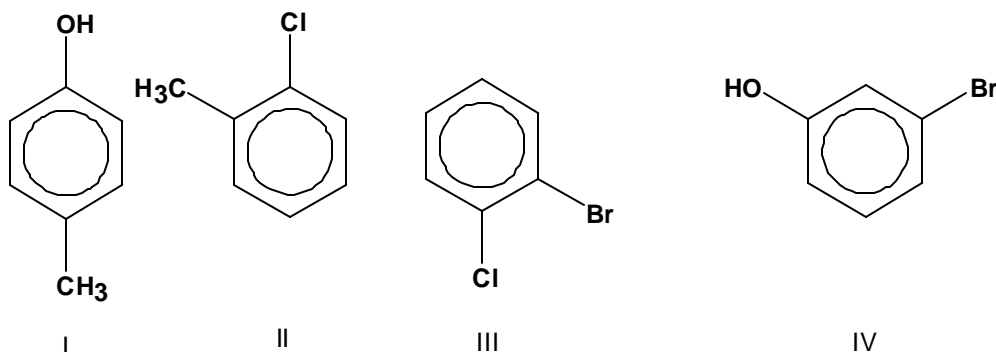


- (a) 2,2-dichloro-1,1-dimethylethane (b) 2,2-dichlorobutane (c) cis-1,2-dichloro-butane
(d) 2,3-dichlorobutane (e) No reaction would occur without UV light as a catalyst.

___20) What is in hemoglobin that prevents carbon monoxide from binding perpendicular to the heme plane; ie. prevents optimal CO/heme association geometry?

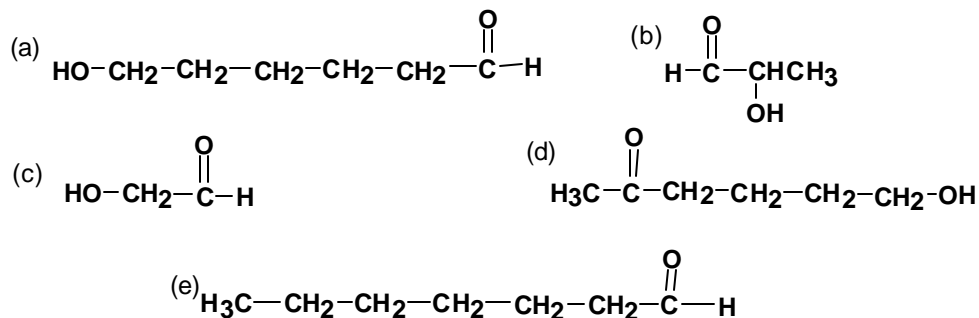
- (a) the iron ion (b) oxygen (c) carbon dioxide (d) a histine (amino acid)
(e) all of the above

___21) In which of the following structures are the substituents placed in a meta position?



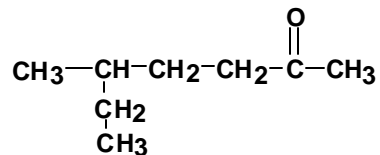
- (a) II and III (b) I only (c) IV only (d) II and IV (e) none of the above

___22) Which of the following is most likely to form a cyclic hemiacetal?



Name _____

—23) What is the correct name of the following compound?



- (a) 2-ethyl-5-methylpentanone (b) 1,4-dimethyl-4-ethylbutanone (c) 3,6-dimethylhexanone
(d) 5-methyl-2-heptanone (e) none of the above

—24) Which of the following is NOT involved in fetal alcohol syndrome?

- (a) ADH (b) Vitamin A (retinol) (c) Protein Kinase C (PKC)
(d) inhibition of neuronal proliferation (e) a product that coagulates proteins and DNA

—25) Secondary alcohols oxidize to form what type of compound

- (a) ketones (b) aldehydes (c) primary alcohols (d) alkenes
(e) secondary alcohols cannot be oxidized

26) Draw 3 of the 4 following structures (15 points / 5 points each):

(a) 2,4-dichlorohexanal

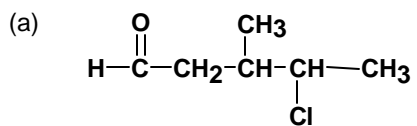
(b) 1-hydroxy-2-pentanone

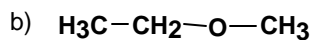
(c) 2-ethyl-1-phenyl-1-butanol

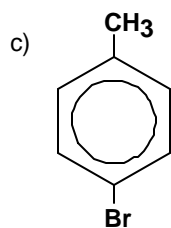
(d) cis-2-bromo-5-ethyl-3-heptene

27) Name 2 of the 3 following structures (10 points / 5 each)

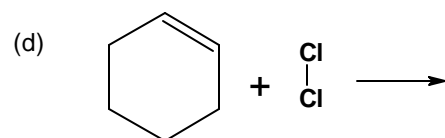
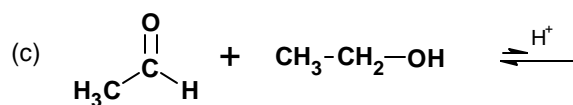
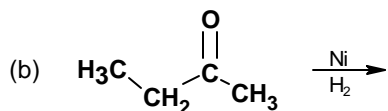
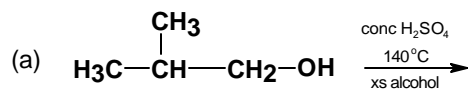
Name _____







28) Draw ALL products of 3 of the 4 reactions below. If no reaction occurs, write "NO REACTION" after the arrow. (15 points / 5 points each)



Name _____

27) Select **one** of the topics below and explain in **detail**, using words and pictures (10 points).

- a) Explain the effect of **(1)** molecular weight and **(2)** branching on the boiling point of hydrocarbons. Be sure to explain in detail the reasons for the two types of effects.
- b) Explain alcohol metabolism. **Compare** and **contrast** the results of ethanol and methanol ingestion. Be sure to explain the reasons for the similarities and differences.
- c) Explain the **similarities** and **differences** between the properties expected of 1,3,5-cyclohexene with those actually observed in benzene. Be sure to include a discussion of resonance in your answer.

Bonus (2 pts) List two organic concepts or classes of compounds that have physiological relevance (as discussed in class). BRIEFLY explain how they are relevant.

A)

B)