

Name \_\_\_\_\_

## Practice Exam

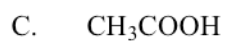
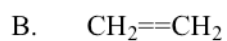
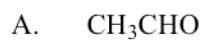
### Topic 10: Organic Chemistry

1. Which of the structures below is an aldehyde?



(Total 1 mark)

2. What is the final product formed when  $\text{CH}_3\text{CH}_2\text{OH}$  is refluxed with acidified potassium dichromate(VI)?



(Total 1 mark)

3. Which of the substances below is **least** soluble in water?



(Total 1 mark)

4. Which type of compound can be made in one step from a secondary alcohol?

- A. an aldehyde
- B. an alkane
- C. a carboxylic acid
- D. a ketone

**(Total 1 mark)**

5. Which are characteristics typical of a free radical?

- I. It has a lone pair of electrons.
  - II. It can be formed by the homolytic fission of a covalent bond.
  - III. It is uncharged.
- A. I and II only
  - B. I and III only
  - C. II and III only
  - D. I, II and III

**(Total 1 mark)**

6. What is/are the product(s) of the reaction between ethene and hydrogen bromide?

- A.  $\text{CH}_3\text{CH}_2\text{Br}$
- B.  $\text{CH}_3\text{CH}_2\text{Br}$  and  $\text{H}_2$
- C.  $\text{CH}_2\text{BrCH}_2\text{Br}$
- D.  $\text{CH}_3\text{BrCH}_2\text{Br}$  and  $\text{H}_2$

**(Total 1 mark)**

7. Which reaction type is typical for halogenoalkanes?

- A. nucleophilic substitution
- B. electrophilic substitution
- C. electrophilic addition
- D. nucleophilic addition

(Total 1 mark)

8. Which substance is **not** readily oxidized by acidified potassium dichromate(VI) solution?

- A. propan-1-ol
- B. propan-2-ol
- C. propanal
- D. propanone

(Total 1 mark)

9. Which formula is a correct representation of pentane?

- A.  $\text{CH}_3\text{CH}_2\text{CHCH}_2\text{CH}_3$
- B.  $(\text{CH}_3\text{CH}_2)_2\text{CH}_3$
- C.  $\text{CH}_3(\text{CH}_2)_3\text{CH}_3$
- D.  $\text{CH}_3(\text{CH}_3)_3\text{CH}_3$

(Total 1 mark)

10. How many structural isomers are possible with the molecular formula  $C_6H_{14}$ ?

- A. 4
- B. 5
- C. 6
- D. 7

(Total 1 mark)

11. Which compound is converted to butanal by acidified potassium dichromate(VI) solution?

- A. butan-1-ol
- B. butan-2-ol
- C. butanone
- D. butanoic acid

(Total 1 mark)

12. Which formulas represent butane or its isomer?

- I.  $CH_3(CH_2)_2CH_3$
- II.  $CH_3CH(CH_3)CH_3$
- III.  $(CH_3)_3CH$

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

(Total 1 mark)

13. Which substance(s) could be formed during the incomplete combustion of a hydrocarbon?

- I. Carbon
  - II. Hydrogen
  - III. Carbon monoxide
- A. I only
  - B. I and II only
  - C. I and III only
  - D. II and III only

(Total 1 mark)

14. Which compound has the lowest boiling point?

- A.  $\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3$
- B.  $(\text{CH}_3)_4\text{C}$
- C.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
- D.  $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

(Total 1 mark)

15. Which product is formed by the reaction between  $\text{CH}_2\text{CH}_2$  and  $\text{HBr}$ ?

- A.  $\text{CH}_3\text{CH}_2\text{Br}$
- B.  $\text{CH}_2\text{CHBr}$
- C.  $\text{BrCHCHBr}$
- D.  $\text{CH}_3\text{CHBr}_2$

(Total 1 mark)

16. Which statement about neighbouring members of all homologous series is correct?

- A. They have the same empirical formula.
- B. They differ by a  $\text{CH}_2$  group.
- C. They possess different functional groups.
- D. They differ in their degree of unsaturation.

(Total 1 mark)

17. Consider the following compounds.

- I.  $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{CH}_3$
- II.  $\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{OH}$
- III.  $(\text{CH}_3)_3\text{COH}$

The compounds are treated separately with acidified potassium dichromate(VI) solution. Which will produce a colour change from orange to green?

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

(Total 1 mark)

18.  $\text{CH}_3\text{COCH}_3$  is the first member of the ketone homologous series. Draw the full structural formula of the next member of this homologous series and predict how its melting point compares with that of  $\text{CH}_3\text{COCH}_3$ .

(Total 2 marks)

**19.** Some alcohols are oxidized by heating with acidified potassium dichromate(VI). If oxidation does occur, identify the possible oxidation products formed by each of the alcohols below. Indicate if no oxidation occurs.

Butan-1-ol

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.....

Butan-2-ol

.....  
.....

2-methylpropan-2-ol

.....  
.....

**(Total 4 marks)**