

FEDERAL REPUBLIC OF SOMALIA

GRADE 12 EXAMS, 2017

# CHEMISTRY



OFFICE OF EXAMINATIONS AND CERTIFICATION



Name.....

School .....

Roll Number.....

**Somali Federal Ministry of Education, Culture & Higher Education**

**Form Four National Standardized Examinations.**

**MAY / JUNE 2017**

**CHEMISTRY EXAMINATION**

**TIME 2 HOURS**

**INSTRUCTIONS:**

- This paper consists of 12 printed pages
- There are 2 sections.
  - ⇒ **PART 1:** 20 Multiple Choice Questions (40 marks)
  - ⇒ **PART 2:** 10 Structured Questions (60 marks)
  - TOTAL** (100 marks)
- Answer all questions in the spaces provided
- No extra paper is allowed

Ministry of Education Examinations

Form 4 Secondary Examination  
Chemistry Exam May/ June 2017

Use this page for rough work. It will NOT be marked.

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**PART 1: 20 MULTIPLE CHOICE QUESTIONS (40 MARKS).** For each question in this section, circle the correct answer

1. Which of the following Compounds **doesn't** represent an organic acid.

- a)  $\text{CH}_3 - \text{COOH}$
- b)  $\text{HCOOH}$
- c)  $\text{CH}_3 - \text{OH}$
- d)  $\text{CH}_3 - \text{CH}_2 - \text{COOH}$

2. A General formula of alkyne is

- a)  $\text{C}_n\text{H}_{2n+2}$
- b)  $\text{C}_n\text{H}_{2n-2}$
- c)  $\text{C}_n\text{H}_{2n}$
- d)  $\text{C}_n\text{H}_{2n+2}$

3. What organic compound does  $\text{HCOOCH}_3$ ?

- a) Ketone
- b) Alcohol
- c) Ester
- d) Aldehyde

4. The oxidation number of chromium (Cr) in potassium dichromate  $\text{K}_2\text{Cr}_2\text{O}_7$  is

- a) +2
- b) +3
- c) +5
- d) +6

5. Removal of halogen and hydrogen atom is

- a) halogenation
- b) dehalogenation
- c) dehydrohalogenation
- d) hydrohalogenation

6. Chemical equilibrium occurs when the number of particles becoming products is equal to the number of particles becoming.....

- a) Electrons
- b) Products
- c) Reactants
- d) Atoms

7. Nuclear reaction is :

- a) One that changes the structure of electrons
- b) One that changes the structure of the nucleus of an atom.
- c) One that doesn't change the structure of the nucleus of an atom
- d) One that doesn't change the structure of the protons and neutrons of an atom.

8. The first synthetic organic molecule is

- a)  $\text{NH}_4\text{CHO}$
- b)  $\text{C}_2\text{H}_{10}$
- c)  $\text{NH}_2\text{Cl}$
- d)  $(\text{NH}_2)_2\text{CO}$

9. Alcohols react with organic acids producing sweet smelling substances known as

- a) Alcohols
- b) Ketones
- c) Esthers
- d) Esters

10. Ultimate products of hydrolysis of proteins is

- a) Amino acids
- b) Aliphatic
- c) Aromatics
- d) Fatty acids

11. What kind of reactions do alkenes normally undergo?

- a) Substitution
- b) Addition
- c) Condensation
- d) Elimination

12. The molecular formula of propanol is

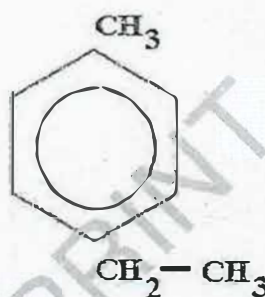
- a) HCHO
- b)  $\text{CH}_3\text{-CHO}$
- c)  $\text{CH}_3\text{-CH}_2\text{CHO}$
- d) COOH

13. A reaction involving a gain and a loss of electrons is called.....

- a. Redox reaction
- b. Combustion reaction
- c. Neutralization reaction
- d. Halogenation reaction

14. The name of the following structure is:

- a) 1,4-dimethylbenzene
- b) 4-ethyl-1-benzene
- c) 3-ethyl-1-methylbenzene
- d) 4-ethyl-2-methylbenzene



15. The fission reaction  $U^{235}$  is used in

- a) Oxidizing agents
- b) Reducing agents
- c) Nuclear agents
- d) Perfume industries

16. The name of the following structure is  $CH_3-CH_2-CH_2-CH_2-\overset{\overset{O}{||}}{C}-H$

- a) Propanol
- b) Pentanal
- c) Pentanol
- d) Pentanone

17. The combustion reaction of hydrocarbons always produce  $\text{CO}_2$  gas and .....

- a)  $\text{H}_2\text{O}$
- b)  $\text{NO}_2$
- c)  $\text{SO}_2$
- d)  $\text{H}_2\text{O}_2$

18. The molecular formula of ethyl benzene is:

- a)  $\text{C}_2\text{H}_2$
- b)  $\text{C}_7\text{H}_{10}$
- c)  $\text{C}_8\text{H}_{10}$
- d)  $\text{C}_6\text{H}_{12}$

19. Vinegar is a dilute solution of

- a) ethanol
- b) Ethanoic acid
- c) Butanoic acid
- d) Formic acid

20. In the reaction  $\text{Mg} + \text{Cl}_2 \rightarrow \text{MgCl}_2$

- a) Magnesium is reducing agent
- b) Chlorine is oxidized
- c) Chlorine is reduced
- d) Molecular number



**PART 2: STRUCTURED QUESTIONS (60 MARKS)**
**QUESTION 1 (6 marks)**

a) Define hydrocarbons [2].

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b) Differentiate between saturated and unsaturated hydrocarbons.[2].

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c) Give two examples of saturated hydrocarbons [2]

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**QUESTION 2 (6 marks)**

Name the following compounds.

Compound	Name
$\begin{array}{c} \text{Cl} \\   \\ \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_3 \end{array}$	
$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH} = \text{CH}_2$	
$\begin{array}{c} \text{CH}_3 - \text{CH} = \text{CH} - \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \\   \\ \text{CH}_3 \end{array}$	

3. Draw the structural formula for the following compounds. [6]

a) 2,2-dimethylbutane

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b) 2-ethyl-propylpropane

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c) 2 -difloro – 3 - hexyne.

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4. What is the oxidation state of Sulphur (S) in each of the following. [6]

a)  $H_2SO_4$

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b)  $SO_4^{2-}$

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c)  $S_2O_3^{2-}$

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Ministry of Education Examinations

Form 4 Secondary Examination  
Chemistry Exam May/ June 2017

5. Question 5 (6 marks)

a) Define a reducing agent [2]

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b) According to the following Redox equation, state the oxidizing agent and the reducing agent:



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6) Define lipids. [2]

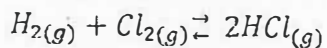
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b) What are the three categories of lipids? [3]

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c) What are the important sources of ...

7. At a given temperature, the reaction : [6]



Produces the following concentration at equilibrium.

$[H_2] = 0.2 \text{ M}$ ,  $[Cl_2] = 0.3 \text{ M}$   $[HCl] = 0.5 \text{ M}$ . Find K

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8. a) Define isotopes. [2]

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b) Name the isotopes of hydrogen. [2]

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c) Write the complete nuclear symbol for the normal hydrogen (protium). [2]

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9. a) Define esterification. [2]

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b) Write down the balanced chemical equation for esterification reaction of methanol with ethanoic acid. [4]

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10. State the difference between . [6]

a) Primary alcohol and secondary alcohol. [3]

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b) Between n-butane and cyclo-butane.[3]

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END