



ཤེས་རིག་ལྡན་ལག་།
སྤྱི་གཙང་འབྲིང་རིམ་སློབ་གྲྭ་གོང་མ།



MOTITHANG HIGHER SECONDARY SCHOOL, THIMPHU

“Every child is **inspired** to learn and **empowered** with **wisdom** to excel in life”

ANNUAL EXAMINATION 2018

Chemistry

Class IX

NAME:.....ROLL No.....SEC.....

Time: 2.15 Hours

Total Marks: 100

Invigilator's initial

For Teacher's Use Only												
Section A							Section B					
Question Number	1a	1b	1c	1d	1e	1f	2	3	4	5	6	7
Marks	25	5	5	5	5	5	10	10	10	10	10	10
Marks Awarded												
Total Marks Awarded												
Teacher's Initial												

READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. Do not write during the first fifteen minutes. This time is to be spent on reading the questions. After having read the question, you will be given two hours to answer all questions.
2. In this paper, there are two sections: **A and B**. Section A is **compulsory**. You are expected to attempt any five questions from section B.
3. The intended marks for questions or parts of questions, are given in brackets [].
4. Read the directions to each question carefully and for Question 1 (a), MCQ, circle the correct answer in the question booklet itself.

Section A (50 Marks)

Compulsory: Attempt all questions

Question 1

For each question there are four alternatives: A, B, C and D. Choose the correct alternative and **circle it**. Do not circle more than ONE alternative. If there is more than one choice circled, NO score will be awarded

- i. All are halogens EXCEPT
a) F b) Cl c) Be d) I
- ii. An element 'X' is present in group 13 and period 3. An element 'X' is
a) Aluminum b) Magnesium c) Sodium d) Silicon
- iii. An element with highest electro-negativity in period 3 is
a) Phosphorous b) Sodium c) Sulphur d) Chlorine
- iv. The nature of chemical bonding in a diamond is
a) Ionic b) Covalent c) Coordinate d) none of these
- v. Molten NaCl conducts electricity due to the presence
a) Free electrons b) free ions c) free molecules d) atoms of Na and Cl
- vi. Formula of common salt is
a) HCl b) HCN c) NaOH d) NaCl
- vii. $\text{Zn} + 2\text{HCl} \longrightarrow \text{ZnCl}_2 + \dots\dots\dots$
a) Zn b) Cl₂ c) H₂ d) Cl
- viii. Elements of groups 3 to 12 are known as
a) Metalliods b) transition metals c) minerals d) flux
- ix. Following are the metals in activity series. Which one is most reactive?
a) K b) Na c) Mg d) Al
- x. The substance which helps in oxidation is called
a) Reducing agent b) Redox c) Oxidizing agent d) none of these
- xi. Rusting of iron is a
a) Fast reaction b) Normal Reaction c) slow reaction d) Average rate of reaction
- xii. Law of indestructibility of a matter is called
a) Law of constant proportion b) Avogadro's law c) Charle's law d) Law of Conservation of mass

- xiii. $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \longrightarrow 2\text{NH}_3 - 93.7 \text{ KJ}$ is
 a) Exothermic reaction b) endothermic reaction c) combustion d) Displacement reaction
- xiv. The heat of neutralization of a strong acid by a strong base is always
 a) Infinity b) Constant c) less than 1.7 KJ per mole d) More than 17.5 KJ per mole
- xv. The rate of chemical reaction depends upon
 a) Time b) Pressure c) Concentration d) All of these
- xvi. The branch of chemistry that deals with process and products that reduce the use and generation of hazardous substances is called
 a) Green Chemistry b) Agricultural chemistry c) Environmental chemistry d) Inorganic Chemistry
- xvii. Carbon dioxide in the air enters a plant via the process of
 a) Respiration b) Photosynthesis c) Transpiration d) decomposition
- xviii. Root nodules are found in
 a) shrubs b) Leguminous plants c) all plants d) all trees
- xix. Respiration is the process by whichis consumed and is produced
 a) CO_2 , O_2 b) O_2 , CO_2 c) CO_2 , energy d) energy, CO_2
- xx. The functional group for the compound CH_3CHO is
 a) Alcohol b) Ketone c) Aldehyde d) Carboxylic
- xxi. The thermal decomposition of an Organic Compound at high temperature is called
 a) Combustion b) Reduction c) Oxidation d) Pryolysis
- xxii. Which of the following is used as domestic fuel
 a) methane b) Ethane c) Ethene d) Ethyne
- xxiii. The general formula of saturated hydrocarbon is
 b) C_nH_{2n} b) $\text{C}_n\text{H}_{2n + 2}$ c) $\text{C}_n\text{H}_{2n - 2}$ d) $\text{C}_n\text{H}_{2n + 1}$
- xxiv. Tthe heat change that takes place when one mole of a solid substance changes into liquid state at its melting point is heat of
 a) Solution b) Hydration c) Vaporization d) Fusion
- xxv. Electronic configuration of Sodium is
 a) 2,8,1 b) 2,8,2 c) 2,8,3 d) 2,8,4

B. Match the following

[1x5= 5]

Column A	Column B
a) Oxidation state of s-block elements	i. Bad conductor of electricity
b) Covalent compounds	ii. Cannot be reversed
c) Element form positive ion by losing electrons or donating electrons	iii. +1 and +2
d) Chemical change	iv. Metals
e) Human body	v. Closed system
	vi. Open system

C. Fill in the blanks by writing suitable word (s)

[1x5=5]

- i. Metals placed above hydrogen are more
- ii.is the gain of Hydrogen or loss of Oxygen
- iii. ΔH isfor exothermic reactions.
- iv. Global warming has been associated with increased depletion of
- v. The organic compounds containing hydrogen and carbon atom only are called

D. State whether the following statements are “true” or “false” and rewrite the false statements in correct form in the answer sheet provided.

[1X5=-5]

- i. The electrons present in the outermost shell of an atom are called valency.
- ii. The ionic bond is non-directional
- iii. Polymers are high molecular mass substance.
- iv. The word root for chain length C_7 is Hex
- v. Ethene is used for the artificial ripening of fruits.

E. Name the following

[1X5=5]

- i. The most abundant non-metal in the earth’s crust.....
- ii. Electronegative elements that have tendency to form negative ions by gaining electrons.....

Question 3.

A)

- i. What is activity series of metals? [1]
- ii. Based on what characteristics are metals arranged in activity series? [1]
- iii. Hydrogen is not a metal but it has been assigned a place in the activity series. Why? [1]
- iv. Difference between metal and non-metal based on [3]
 - a) State
 - b) Luster
 - c) Conduction of heat

B) i. Explain law of indestructibility of matter with an example [2]

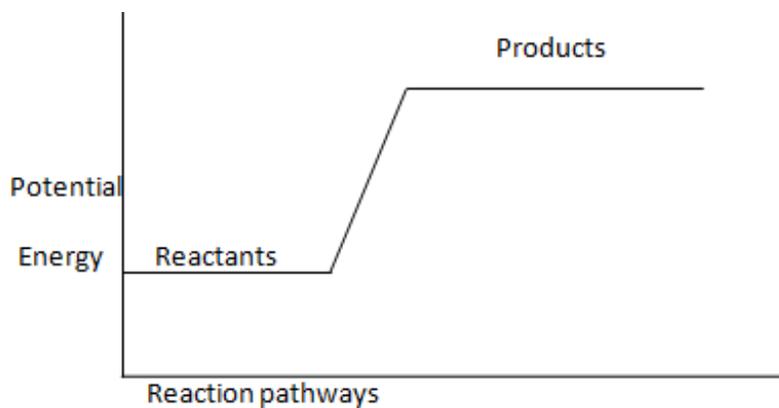
ii. Balance the following reactions [2]



Question 4.

A) i. Define system and surrounding. [2]

ii. Study the diagram below and answer the following questions [5]



- a) Write the Enthalpy change for any given reaction . [1]
- b) Compare the energy of reactants and products [1]
- c) What kind of reaction does it represent? [1]
- d) Mention whether heat is evolved or absorbed? [1]
- e) Is the given reaction exothermic or endothermic [1]



- B) i. List down 2 greenhouse gases [1]
ii. If you are a principal of a school, how will you reduce global warming? Write 2 measures that the school can adopt to reduce global warming?

Question 5.

- A) The general formula of alkene is C_nH_{2n} [3]
i. Write the molecular formula if $n=5$
ii. Give name for the above molecular formula
iii. Is it saturated or unsaturated? Give justifications.
- B) Identify suffix, word root and prefix for the given compound.
2-ethyl propane
- C) Write structural formula from the following condensed formula [3]
i. C_4H_{10}
ii. C_2H_2
iii. C_3H_6
- D) Give the name for the following compounds. [5]
i. $CH_3-C \equiv CH_3$
ii. CH_3Cl
iii. CH_3-CH_3

Question 6.

- a) Define ionization energy. What happens to ionization energy of alkali metals within the group? [2]
b) HCl gas is a covalent compound but its aqueous solution conducts electricity. Why? [1]
c) Why some metals are more reactive and others are less reactive? [2]
d) Define redox reaction [1]
e) Identify oxidation and reduction reactions from the following. [4]
- i. $CuO + Mg \longrightarrow Cu + MgO$
ii. $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$
iii. $CO_2 + H_2 \longrightarrow CO + H_2O$
iv. $CuO + H_2 \longrightarrow Cu + H_2O$

Question 7.

A)

- 1) what kind of system does the picture (figure 1) represent? Explain the system [2]

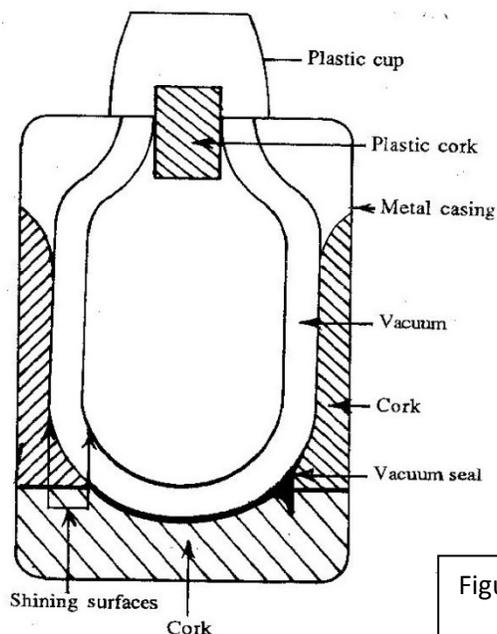


Figure 1: Thermoflask

- 2) Explain rate of reaction based on the following factors [2]
- Surface area
 - Light
- B) i. Mention 4 essential requirements of a fertilizer [2]
ii. Mention modes through which Nitrogen is fixed in the soil [1]
- C) i. Write the word root for C_6 and C_8 . [1]
ii. Write oxidation reaction of ethane in presence catalyst Cu [1]
iii. Which name is correct for the given compound. [1]
- $$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$$
- 3 methyl butane
 - 2 methyl butane