

**2018**  
**MATRICULATION EXAMINATION**  
**DEPARTMENT OF MYANMAR EXAMINATION**  
**CHEMISTRY** **Time Allowed: 3 Hours**  
**WRITE YOUR ANSWERS IN THE ANSWER BOOKLET**  
**The symbols in this paper have their usual significance**

**SECTION (A)**  
**(Answer ALL questions)**

1. Write **TRUE** or **FALSE** for each of the following statements. **(7 marks)**
  - (a) Metals are good insulators of electricity.
  - (b) A positive catalyst decreases the rate of reaction.
  - (c) Factors kept constant in Boyle's law are mass and temperature.
  - (d) Oxidation is the loss of electrons from a substance.
  - (e) Dilution of sulphuric acid is an exothermic reaction.
  - (f) An indicator is required in the redox titration using potassium permanganate.
  - (g) Mass number of an element never changes.
  
2. Fill in the blanks with the correct word(s), phrase(s), term(s), unit(s), etc., **(7 marks)** as necessary.
  - (a) Halogens have essential electronic structure of -----.
  - (b) Ammonia is used in the large scale manufacture of -----.
  - (c) Small  $K_a$  values indicate ----- acids.
  - (d) The formula of red lead is -----.
  - (e) Two crystalline forms of sulphur are rhombic sulphur and ----- sulphur.
  - (f) Gold and platinum are ----- and do not corrode.
  - (g) Seed oils can be converted to biodiesel by the chemical process known as -----.
  
3. Select the correct word(s), notation(s), term(s), unit(s), etc., given **(7 marks)** in the brackets.
  - (a) [ Alkanes ; Alkenes ; Alkynes ] are saturated hydrocarbons.
  - (b) Phenolphthalein is [ red ; colourless ; orange ] with acids.
  - (c) Oxidation number of metal in pure form is [ +1 ; 0 ; -1 ].
  - (d) The[ noble gases ; non-metals ; metals] are neither electropositive nor electronegative.
  - (e) A [ catalyst ; substance ; particle ] alters the rate of reaction.
  - (f) A volume of gas [ remains constant ; expands ; contracts ] when heated.
  - (g) [ Leaf crops; Root crops; Seed bearing plants ] require good amount of nitrogen.

**[P.T.O.]**

4. Match each of the items in **List A** with the appropriate items given in **List B**. (7 marks)

<b>List A</b>	<b>List B</b>
(a) Dolomite	(i) $\text{CaOCl}_2 \cdot 2\text{H}_2\text{O}$
(b) Ammonia	(ii) $\text{CH}_3\text{COONa}$
(c) Phenol red	(iii) $\text{MgCO}_3 \cdot \text{CaCO}_3$
(d) $\Delta H^\circ$ is negative value	(iv) turns moist red litmus paper blue
(e) Sodium ethanoate	(v) $\text{Pb}_3\text{O}_4$
(f) An ingredient of paint	(vi) dilution of sulphuric acid
(g) Bleaching powder	(vii) an indicator

5. Define the following: (8 marks)

- Acidity
- Thermal energy
- End point
- Oxidation in terms of electronegative element
- Anion
- Noble gas
- Intermediate state
- Electrolysis

### SECTION (B)

6. Answer **ALL** questions. (12 marks)

- Describe the name and chemical formula of the ore of copper.
- Mention the uses of common salt.
- What happens when sodium is heated at  $300^\circ\text{C}$  -  $400^\circ\text{C}$  in gaseous ammonia ?  
(Give equation in words and symbols).
- Describe the " Le Chatelier's Principle ".
- Mention the term " Amphiprotic molecule ".
- Describe the homopolymers with examples.



7. Answer any **FIVE** questions.

(20 marks)

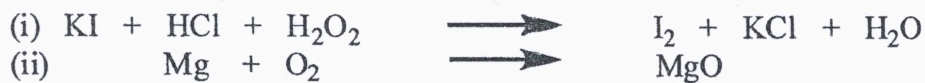
(a) Some of the elements are given: H, He, Ne, B, Na, Al, K, Ca.

- (i) Which of these elements are noble gases ?
- (ii) Which of these elements are alkali metals ?
- (iii) Which of these elements have valence of 2 ?
- (iv) Give the position in periodic table for Al.

(b) How many grams of Zinc will have to be treated with dilute hydrochloric acid to liberate  $5 \text{ dm}^3$  of hydrogen at  $30^\circ\text{C}$  and 500 mm Hg ? (  $Zn = 65$  )

(c) A current of 0.45 A is passed through metal ( I ) nitrate solution for 25 minutes and 0.755 g of metal is deposited. Calculate the relative atomic mass of the metal. (One Faraday = 96500C)

(d) Balance the following redox reactions using either oxidation number method or ion electron (half reaction) method.



(e) (i) Explain the terms : "rate of reaction" and "activation energy".

(ii) What is the effect of increasing pressure on the following equilibrium ?

Give reason for your answer.



(f) (i) What is meant by the term : "Recycling metals" ?

(ii) Complete the following reactions.

( Symbols only for two equations or Words and Symbols for one equation )

Roasting of copper pyrites in a limited supply of air, and

Heating of copper(I)sulphide in a controlled amount of air.

(g) Write equations **in words and symbols** to indicate the followings.

(i) Sodamide was treated with water.

(ii) Reaction of zinc on hot dilute nitric acid.

(h)(i) Write the names and formula of two important nitrogen fertilizers.

(ii) Arrange the substances that dissolve in sea water to their increasing solubilities.

[P.T.O.]

8. Answer any **FOUR** questions.

**(32 marks)**

- (a) (i) What is meant by the term "titration curve" ? Describe the types of titration curve.  
 (ii) Calculate the pH and pOH values of the two solutions containing 0.025 M  $\text{H}_2\text{SO}_4$  and 0.5 M NaOH respectively. ( $K_w = [\text{H}^+][\text{OH}^-] = 10^{-14}$ )
- (b) (i) Explain the term : "Heat of formation of compound".  
 (ii) Calculate the heat of formation of methanoic acid, if its heat of combustion is  $-1100 \text{ kJmol}^{-1}$ . The heats of formation of  $\text{CO}_2(\text{g})$  and  $\text{H}_2\text{O}(\text{l})$  are  $-400 \text{ kJmol}^{-1}$  and  $-300 \text{ kJmol}^{-1}$ , respectively.
- (c) (i) What happens when methyl iodide is treated with hydrogen iodide ?  
 (ii) Illustrate the "ozonolysis of propene".  
 (iii) What happens when acetylene is passed into ammoniacal solution of silver oxide ?  
 (iv) What products would you expect when methyl acetylene is passed over heated sodium ?
- (d) (i) Distinguish between 1- butene and 1- butyne. Give relevant equations.  
 (ii) When a compound "Z" is treated with  $\text{PCl}_5$ , ethyl chloride is obtained. What is compound "Z" ? Write down the equation.  
 (iii) How is biogas produced ? Give the name of this reaction process. What is biogas composed of ?  
 (iv) State the difference between the flash point and ignition temperature.
- (e) Discuss the Manufacture of sodium hydroxide from common salt by electrolysis.
- (f) Describe the laboratory preparation of nitrogen dioxide with a labelled diagram.
- (g) Vinegar contains the organic acid (ethanoic acid). When 6 g of vinegar is titrated with 0.11 M sodium hydroxide,  $40 \text{ cm}^3$  of this base to be added to reach the equivalence point. What is the percentage by mass of acetic acid in this sample of vinegar ? ( $\text{C} = 12$ ,  $\text{H} = 1$ ,  $\text{O} = 16$ )
- (h) Write a process for the extraction of "cast iron" from its ore.

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