

# CHEMISTRY

2019

Time: 30 Minutes

Max Marks: 17

## SECTION "A" (MULTIPLE CHOICE QUESTIONS)

Choose the correct answer for each from the given options:

1. He was the first scientist who used Opium as an anesthesia:
  - Ibne - Sina
  - Al - beruni
  - Al - Razi
  - Robert Boyle
2. The basic unit of electric current is:
  - Joule
  - Coulomb
  - Ampere
  - kilo watt
3. Which one of the following elements has electronic configuration as  $K^2L^8M^2$ ?
  - Calcium
  - Magnesium
  - Neon
  - Sodium
4. The mass of one mole of a substance expressed in gram is called:
  - Empirical Formula
  - Molecular Formula
  - Molecular Mass
  - Molar Mass
5. This one of the following pair of elements is chemically similar:
  - (K, Cr)
  - (Cu, Ca)
  - (F, Cl)
  - (N, O)
6. The process in which molecules escape from surface of a liquid is called:
  - Evaporation
  - Boiling
  - Melting
  - Sublimation
7. The bond in MgO is:
  - Electrovalent Bond
  - Coordinate Covalent Bond
  - Covalent Bond
  - Chemical Bond
8. If 0.6 is the mole fraction of solute in a solution then the mole fraction of solvent would be:
  - 0.1
  - 0.2

- 0.3
  - 0.4
9. The color of black shoes polish is due to:
- Bees Wax
  - Animal charcoal
  - Bismarck brown
  - Pearl Ash
10. The most abundant element found in earth crust is:
- Oxygen
  - Silicon
  - Nitrogen
  - Hydrogen
11. Coca-Cola contains this acid:
- Carbonic acid
  - Acetic acid
  - Boric acid
  - Formic acid
12. This one of the following process is exothermic:
- Evaporation
  - Thermal Decomposition
  - Respiration
  - Melting
13. The maximum density of water at 4°C is:
- 0.918 g/cm<sup>3</sup>
  - 0.998 g/cm<sup>3</sup>
  - 1 g/cm<sup>3</sup>
  - 1.2 g/cm<sup>3</sup>
14. It is the highest Carbon content:
- Peat
  - Lignite
  - Bitumen
  - Anthracite
15. Sulphur burns in air with blue flames to produce:
- H<sub>2</sub>O
  - SO<sub>2</sub>
  - SO<sub>3</sub>
  - S<sub>2</sub>Cl<sub>2</sub>
16. It is an alloy of copper and tin:
- Bronze
  - Brass
  - Nichrome
  - German silver

Time: 2 Hours

Max Marks: 68

Note: Answer 10 question from this section:

## SECTION "B" (SHORT QUESTIONS ANSWERS)

- Chemistry and human society "Go Hand in Hand". Write four arguments in support of this statement.
- State the law of Reciprocal proportion and explain it with the help of an example.
- Define Radioactivity/ Name the three types of radioactive Rays and write one characteristic of each.
- Write down four comparative points between Covalent bond and Dative bond.
- What is "Nascent" (Newly born) Hydrogen? Describe its reactivity.
- Find out the mass of 4.5 moles of the following compounds:
  - Water ( $H_2O$ )
  - Sodium Carbonate ( $Na_2CO_3$ )  
Atomic masses: (N = 23, C = 12, H = 1, O = 16)
- Define Combustion Reaction. Write down only balanced chemical equations for combustion of the following:
  - Methane
  - Ethene
  - Ethyne
- Define "Basicity of Acid" and "Acidity of acid" and identify the following acids as mono basic, di basic and tri basic acid:
  - $H_2PO_4$
  - $CH_3COOH$
  - $HNO_3$
  - $H_2SO_4$
- Write down pH values of the following biological fluids:
  - Vinegar
  - Saliva
  - Egg-White
  - Cow-Milk
- Reproduce the following reactions in the form of balanced chemical equations:
  - Ethene reacts with Hydrogen gas to form Ethane.
  - Carbon monoxide reacts with Oxygen to form Carbon dioxide.
- Calculate the molality of the aqueous solution containing 18g Glucose ( $C_6H_{12}O_6$ ) dissolved in 300g of water.
- What is Ozone? Where does it occur in nature? Write down its two uses also.
- Write down the chemical formulae of the following compounds:
  - Sodium Nitrate
  - Caustic Soda
  - Ammonium Chloride
  - Table Salt
- Give reasons of the following:
  - Why does ionization energy of elements increase from left to right in a period of the periodic table?
  - Why does lime water turn milky when dioxide gas is passed through it?

15. What is diffusion? State Graham's Law of Diffusion of gases and Re-arrange the following gases in order of diffusion rate from faster to slower.  $O_2$ ,  $H_2$ ,  $Cl_2$ ,  $N_2$ .

### SECTION "C" (DETAILED QUESTIONS ANSWERS)

Note: Attempt Two questions from this Section. (28)

16. (a) What do you mean by saponification? Write the composition of detergent and its functions.  
(b) What are hydrocarbons? How these are classified? Explain in detail. Also draw structural diagrams.
17. (a) Describe the industrial preparation of Chlorine gas by any one of the following cells with electrodes reaction and labeled diagram.  
i. Nelson's cell  
ii. Castner-Kellner's cell.  
(b) Write the salient features of Group VIIIA (Inert or Noble gases) and describe the discovery of Noble gases.
18. (a) How Sulphur is extracted by "Frisch process"? Describe it and draw its labeled diagram also.  
(b) Define the term "matte". Describe the electrolytic refining of blister copper with the help of electrode reaction and labeled diagram of electrolytic cell.
19. (a) Describe the industrial preparation of Nitric acid by Ostwald's method with balanced chemical equations and also draw labeled diagram of this method.  
(b) State Faraday's First and second law electrolysis. Calculate the amount silver deposited at Cathode when 10 ampere of current is passed for 50 minutes through the solution of silver.

# CHEMISTRY

# 2018

Time: 30 Minutes

Max Marks: 17

### SECTION "A" (MULTIPLE CHOICE QUESTIONS)

- 1) Choose the correct answer for each from the given options:
1. The process  $n(CH_2 = CH_2) \rightarrow (-CH_2 - CH_2 -)_n$  belongs to:
- Analytical Chemistry
  - Inorganic Chemistry
  - Physical Chemistry
  - Polymeric Chemistry
2. It is an example of Endothermic reaction:
- Decomposition Reaction
  - Respiration
  - Neutralization
  - Combustion Reaction
3. It is still considered, the incomplete period in the Modern Periodic Table:
- First
  - Third
  - Fifth
  - Seventh
4. This one of the following element has the smallest atomic radius:

- Magnesium
  - Calcium
  - Strontium
  - Radium
5. The class of Plastic that can only be heated once before they set on cooling, are called:
- Thermo Plastics
  - Thermosetting Plastics
  - Cellulose Acetate
  - Cellulose Nitrate
6. It is an ALKYL group:
- $C_6H_{12}$
  - $C_6H_{13}$
  - $C_6H_{14}$
  - $C_6H_{15}$
7. These are called salt formers:
- Alkali metals
  - Halogens
  - Noble gases
  - Hydrides
8. Oxidation takes place at:
- Anode
  - Cathode
  - Anode and cathode
  - None of these
9. The temperature at which the vapour pressure of a liquid becomes equal to its external atmosphere pressure is called:
- Melting Point
  - Boiling Point
  - Triple Point
  - Freezing Point
10. The chemical formula of "Oil of Vitriol" is:
- $H_2SO_4$
  - $CuSO_4$
  - $CaSiO_3$
  - $H_2S_2O_7$
11. It is an alloy of Copper and Tin:
- Bronze
  - Brass
  - Nichrome
  - German Silver
12. Which pair of the following molecules has the same number of protons?
- $O_2$  and  $N_4$
  - $Cl_4$  and  $Br_2$
  - $CH_4$  and  $NH_3$
  - $CO_2$  and  $SO_2$
13. A suspension of droplets of one liquid into another in which it is not soluble is called:

- Smoke
  - Mud
  - Foam
  - Emulsion
14. A Dative bond is always formed between the two:
- Like atoms
  - unlike atoms
  - similar atoms
  - like and unlike atoms
15. Elector chemical Equivalent is denoted by:
- A
  - C
  - X
  - Z
16. Water accounts for the weight of a human body is about:
- 50 %
  - 60%
  - 70%
  - 80%

# CHEMISTRY

**2018**

Time: 2 Hours

Max Marks: 68

Note: Answer 10 question from this section:

## SECTION "B" (SHORT QUESTIONS ANSWERS)

- 2) What is Chemistry? Write names of any six branches of Chemistry.
- 3) State the Law of Multiple Proportion and explain it with the help of two examples.
- 4) What is a chemical reaction? Describe 'decomposition reaction' and 'combustion reaction' with an example of each type of reaction.
- 5) What are "double salts"? Write names of any three such salts with their chemical formulae.
- 6) Write down four salient features of Mendeleev's periodic table.
- 7) How many atoms or molecules are there in?
  - i. 8g of Sulphur (S)
  - ii. 8.8g of Carbon dioxide (CO<sub>2</sub>) (Atomic Masses :S=32 , C=12, O=16)
- 8) Reproduce any two of the following chemical reaction in the form of balanced chemical equations:
  - (i) Carbon monoxide reacts with Oxygen gas to form Carbon dioxide
  - (ii) Zinc metal reacts with Hydrochloric acid to give Zinc chloride and Hydrogen gas.
  - (iii) Potassium Chlorate decomposes on heating into Potassium Chloride and Oxygen gas
- 9) Define the following:
  - (i) Isotopes
  - (ii) Electronegativity
  - (iii) Electron Affinity
  - (iv) Polar Bond

- 10) Define pH and calculate the pH and pOH of  $10^{-5}$  molar solution of  $\text{HNO}_3$ .
- 11) What is meant by Soft water, hard water and Heavy Water? Also give causes of permanent hardness of water.
- 12) What is allotropy? Describe three allotropic forms of Sulphur.
- 13) Define the terms: (i)Homologous series (ii)Isomerism (iii)Functional group (iv) Aromatic Compounds
- 14) A current of 5 Ampere was passed through an electrolytic solution of Copper Sulphate for an hour. Find the mass of Copper metal deposited at the Cathode. (The Electro chemical Equivalent of Copper is 0.000329g/c)
- 15) Write down any four methods of foods preservation.
- 16) Give reason:
  - (i) Which gas among  $\text{CO}_2$ , CH and  $\text{H}_2$  will diffuse faster and why?
  - (ii) Water filled glass bottles often crack in freezer. Why

## SECTION "C" (DETAILED QUESTIONS ANSWERS)

Note: Answer any TWO questions from this Section. Each question carries 14 marks.

- 17) (a) What is metallurgy? How is Aluminum metal extracted from its Bauxite ore? Describe the process giving balanced chemical equations. Also draw a labelled diagram of the electrolytic cell used in the manufacture of Aluminum.  
(b) Define neutralization and describe three different concepts about Acids and Bases with appropriate examples of each.
- 18) (a) What are Oxides? How are they classified? Describe normal oxides in detail.  
(b) State the law discovered by French Chemist Lavoisier and describe Landolt's experiment to vary the law with labelled diagram and relevant chemical equation
- 19) (a) Define solubility and describe in detail the factors that affect solubility.  
(b) Describe the industries manufacture of Sulphuric acid by contact process with balanced chemical equations.
- 20) (a) Describe Ammonia-Solvay process for industrial preparation unhydrous Sodium Carbonate with balanced chemical equations also write down its TWO USES.  
(b) What is electroplating? Explain how would you electroplate an Iron spoon with Nickel? Draw a labelled diagram also.

# CHEMISTRY

# 2017

Time: 30 Minutes

Max Marks: 17

## SECTION "A" (MULTIPLE CHOICE QUESTIONS)

Choose the correct Answer for each from the given Options:

1. Oxygen was discovered by:
  - J. Priestly
  - J. Black
  - Cavendish
  - Scheele
2. 5 moles of water are equal to:
  - 80 g
  - 90 g
  - 100 g
  - 180g
3. A reaction in which a chemical substance breaks down to form two or more simpler substance is called:
  - Decomposition Reaction
  - Addition Reaction
  - Displacement Reaction

- Combustion Reaction
4. It is the lightest particle in the following:
    - Electro
    - Proton
    - Neutron
    - Alpha Particle
  5. Atomic number of Fluorine is:
    - 7
    - 2
    - 11
    - 20
  6. The sum of the mole fractions of solute and solvent is equal to:
    - 5
    - 2
    - 0
    - 1
  7. When molten sodium chloride is electrolysed, it is formed at cathode:
    - Sodium
    - Chlorine
    - Hydrogen
    - Oxygen
  8. The electrolyte used in lead storage battery is dilute solution of:
    - HCl
    - NaCl
    - $H_2SO_4$
    - $HNO_3$
  9. Alum is:
    - Single salt
    - Double salt
    - Triple salt
    - Normal salt
  10. In this reaction heat is taken-in:
    - Exothermic reaction
    - Endothermic reaction
    - Neutralization
    - Combustion
  11. A human being drinks water daily about:
    - 5 liters
    - 2 liters
    - 1 liters
    - 10 liters
  12. China clay is used in making of:
    - Glass
    - Electrical Insulator
    - Crockery
    - Ceramics
  13. The molecular formula of sand is:
    - $SiO_2$
    - $SiO_3$
    - $Na_2O$



- $\text{CaSiO}_2$
14. The medal given to third position holder in any event is made up of:
- Bronze
  - Brass
  - Nichrome
  - Copper
15. Natural gas mainly consists of:
- Ethane
  - Methane
  - Propane
  - Butane
16. General formula for alkane is:
- $\text{C}_n\text{H}_{2n}$
  - $\text{C}_n\text{H}_{2n+2}$
  - $\text{C}_n\text{H}_{2n+1}$
  - $\text{C}_n\text{H}_{2n-2}$
17. This constituent of shoe polish provides shining to the shoes:
- Bee wax
  - Pearl ash
  - Soap
  - Sodium Hydroxide

# CHEMISTRY

2017

Time: 2 Hours

Max Marks: 68

Note: Answer 10 question from this section:

## SECTION "B" (SHORT QUESTIONS ANSWERS)

1. Write names of any six branches of Chemistry.
2. Define:
  - (i) Empirical Formula
  - (ii) Avogadro's Number
  - (iii) Molar mass
3. Balance the following Chemical Equation
  - i.  $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
  - ii.  $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
  - iii.  $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
4. How many protons and neutrons are present in the following atoms:
  - i.  ${}^{14}_7\text{X}$
  - ii.  ${}^{27}_{13}\text{X}$
  - iii.  ${}^{23}_{11}\text{X}$
5. Define:
  - i. Dobereiner's rule of Triads
  - ii. Newland's law of octave
  - iii. Modern Periodic Law
6. Write three characteristic properties of Ionic compounds.
7. Define: (i) Fusion (ii) Evaporation (iii) Sublimation

8. State Faraday's 1<sup>st</sup> law of electrolysis and 2<sup>nd</sup> law of Electrolysis.
9. Write three differences between Oxidation and Reduction.
10. Describe the Lewis concept about acids and bases.
11. Define exothermic and endothermic reactions. Give one example of each with balanced chemical equations.
12. Compare three physical properties of diamond and graphite.
13. Define Electrolysis and write its two uses.
14. What is Ozone? Where does it exist in nature and how it is beneficial for earth.
15. Write the chemical formula of:
  - (i) Copper pyrite
  - (ii) Hematite
  - (iii) Bauxite
16. Define:
  - (i) Homologous Series
  - (ii) Functional group
  - (iii) Isomerism
17. What is soap? Write names of four kinds of soap.
18. What is suspension? Write names of four examples of suspension in daily life.
19. A hydrocarbon contains six carbon atoms. Write its molecular formula. If it is:
  - (i) An alkane
  - (ii) An Alkene
  - (iii) An alkyne
20. Calculate the molarity of a solution that contains 2 moles of NaOH dissolved in 0.5 liter of the solution.

### SECTION "C" (DETAILED QUESTIONS ANSWERS)

Note: Answer any TWO questions from this Section. Each question carries 14 marks.

21.
  - (a) Describe the industrial preparation of Nitric Acid by Ostwald's method with balanced chemical equations.
  - (b) Write two causes of food spoilage and describe two methods of its preservation.
  - (c) Write four difference between ordinary water and heavy water
22.
  - (a). What are Oxides? Describe the types of Normal oxides with one example of each.
  - (b). Describe the extraction of Iron from its Haematite ore in the blast furnace. Also write equations of chemical reactions. (Diagram is not required.)
  - (c). Write four uses of Sulphuric Acid.
23.
  - (a). Describe the laboratory method for the preparation of Chlorine gas with a balanced chemical equation and draw labelled diagram also.
  - (b). Write four general properties of transition elements.
  - (c). Define salts and describe three types of salts with examples.

# CHEMISTRY

# 2016

Time: 30 Minutes

Max Marks: 17

### SECTION "A" (MULTIPLE CHOICE QUESTIONS)

Choose the correct Answer for each from the given Options:

1. He discovered oxygen:
  - J. Black
  - J. Priestly
  - Scheele
  - Cavendsh

2. It is used in shoe polish to provide shine to the shoes.
  - Bee wax
  - Pearl ash
  - Soap
  - Castic soda
3. The formula of Iron rust is:
  - $\text{Fe}_2\text{O}_3$
  - $\text{Fe}_2\text{O}_3\text{H}_2\text{O}$
  - $\text{FeO}$
  - $\text{Fe}_3\text{O}_4$
4. In peroxides, the valance of oxygen is:
  - -1
  - -2
  - 1
  - -1/2
5. China clay is used in making of:
  - Glass
  - Crockery
  - Ceramics
  - Silica Jel
6. A suspension of carbon particles in air is called:
  - Foam
  - Mud
  - Smoke
  - Fog
7. When molten sodium chloride is electrolysed, it is formed at cathode:
  - Sodium
  - Chlorine
  - Hydrogen
  - Oxygen
8. The electrolyte used in lead storage battery is dilute solution of:
  - $\text{HCl}$
  - $\text{NaCl}$
  - $\text{H}_2\text{SO}_4$
  - $\text{HNO}_3$
9. Alum is:
  - Single salt
  - Double salt
  - Triple salt
  - Normal salt
10. In this reaction heat is taken-in:
  - Exothermic reaction
  - Endothermic reaction
  - Neutralization
  - Combustion
11. A human being drinks water daily about:
  - 5 liters
  - 2 liters
  - 1 liters
  - 10 liters

12. China clay is used in making of:
- Glass
  - Electrical Insulator
  - Crockery
  - Ceramics
13. The molecular formula of sand is:
- $\text{SiO}_2$
  - $\text{SiO}_3$
  - $\text{Na}_2\text{O}$
  - $\text{CaSiO}_2$
14. The medal given to third position holder in any event is made up of:
- Bronze
  - Brass
  - Nichrome
  - Copper
15. Natural gas mainly consists of:
- Ethane
  - Methane
  - Propane
  - Butane
16. General formula for alkane is:
- $\text{C}_n\text{H}_{2n}$
  - $\text{C}_n\text{H}_{2n+2}$
  - $\text{C}_n\text{H}_{2n+1}$
  - $\text{C}_n\text{H}_{2n-2}$
17. This constituent of shoe polish provides shining to the shoes:
- Bee wax
  - Pearl ash
  - Soap
  - Sodium Hydroxide

# CHEMISTRY

2016

Time: 2 Hours

Max Marks: 68

Note: Answer 10 questions from this section:

## SECTION "B" (SHORT QUESTIONS ANSWERS)

1. Write any three postulates of Dalton's Atomic Theory.
2. Balance the following Chemical Equation
  - i.  $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
  - ii.  $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
  - iii.  $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$
3. Define:
  - (i) Empirical Formula
  - (ii) Molar Mass
  - (iii) Avogadro's Number
4. Write down three characteristics of Cathode Rays.

5. State the following laws:
  - i) Dobereiner's Law of Triad
  - ii) Newland's Law of Octave
  - iii) Modern periodic Law
6. Write three differences between ionic compounds and covalent compounds
7. Define:
  - (i) Fusion
  - (ii) Evaporation
  - (iii) Sublimation
8. Define solubility and describe effects of temperature and pressure on solubility.
9. Define:
  - (i) Chemical Bond
  - (ii) Metallic Bond
  - (iii) Hydrogen Bond
10. Define:
  - (i) Diffusion
  - (ii) Brownian Movement
  - (iii) Boiling Point
11. State the Lewis concept about acids and bases and explain it with an example.
12. Write three differences between Solution and Suspension.
13. Define:
  - (i) Enthalpy of reaction
  - (ii) Heat of Neutralization
  - (iii) Endothermic Reaction
14. What is Allotropy? Name two crystalline allotropes and two amorphous allotropes of carbon.
15. Write Industrial preparation of Ammonia by Haber-Bosch process with balanced chemical equation.
16. What is Aqua Regia? How does it dissolve gold? Explain.
17. Write three characteristics of Halogens.
18. What is an Alloy? Write names of two alloys of Copper with their composition.
19. Define:
  - (i) Homologous series
  - (ii) Cracking
  - (iii) isomerism
20. What is meant by saponification? Write the names of four kinds of soap
21. What is plastic? Write two types of plastic.

### **SECTION "C" (DETAILED QUESTIONS ANSWERS)**

Note: Answer any TWO questions from this Section. Each question carries 14 marks.

22. (a). Describe the industrial manufacture of Sulphuric Acid by Contact Process with balanced chemical equation. (Diagram not required)
- (b). Describe the extraction of Sulphur by Frasch process.
23. (a). Describe the manufacture of Sodium Carbonate by Ammonia Solvay process with chemical equations.
- (b). Define isotopes and write names and structures of three isotopes of Hydrogen.
- (c). What are elements of Group I-A of Periodic Table called? Write three general properties of these elements.
24. (a). Explain the process of extraction of iron from its Haematite ore in the Blast Furnace with chemical equations.
- (b). Write four difference between solution and suspension.
- (c). Calculate the amount of Silver (Ag) Deposited at Cathode, When 10 Ampere of Electric current is passed for 1hour through the solution of  $\text{AgNO}_3$ . (Z of Ag=0.001118 g/C)

Time: 30 Minutes

Max Marks: 17

## SECTION "A" (MULTIPLE CHOICE QUESTIONS)

Choose the correct Answer for each from the given Options:

- Oxygen was discovered by:
  - J. Priestly
  - J. Black
  - Cavendish
  - Scheele
- 5 moles of water are equal to:
  - 80 g
  - 90 g
  - 100 g
  - 180g
- A reaction in which a chemical substance breaks down to form two or more simpler substance is called:
  - Decomposition Reaction
  - Addition Reaction
  - Displacement Reaction
  - Combustion Reaction
- It is the lightest particle in the following:
  - Electro
  - Proton
  - Neutron
  - Alpha Particle
- Atomic number of Fluorine is:
  - 7
  - 2
  - 11
  - 20
- The sum of the mole fractions of solute and solvent is equal t:
  - 5
  - 2
  - 0
  - 1
- When molten sodium chloride is electrolysed, it is formed at cathode:
  - Sodium
  - Chlorine
  - Hydrogen
  - Oxygen
- The electrolyte used in lead storage battery is dilute solution of:
  - HCl
  - NaCl
  - H<sub>2</sub>SO<sub>4</sub>
  - HNO<sub>3</sub>
- Alum is:
  - Single salt

- Double salt
  - Triple salt
  - Normal salt
10. In this reaction heat is taken-in:
- Exothermic reaction
  - Endothermic reaction
  - Neutralization
  - Combustion
11. A human being drinks water daily about:
- 5 liters
  - 2 liters
  - 1 liters
  - 10 liters
12. China clay is used in making of:
- Glass
  - Electrical Insulator
  - Crockery
  - Ceramics
13. The molecular formula of sand is:
- $\text{SiO}_2$
  - $\text{SiO}_3$
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  - $\text{CaSiO}_2$
14. The medal given to third position holder in any event is made up of:
- Bronze
  - Brass
  - Nichrome
  - Copper
15. Natural gas mainly consists of:
- Ethane
  - Methane
  - Propane
  - Butane
16. General formula for alkane is:
- $\text{C}_n\text{H}_{2a}$
  - $\text{C}_n\text{H}_{2n+2}$
  - $\text{C}_n\text{H}_{2n+1}$
  - $\text{C}_n\text{H}_{2n-2}$
17. This constituent of shoe polish provides shining to the shoes:
- Bee wax
  - Pearl ash
  - Soap
  - Sodium Hydroxide

Time: 2 Hours

Max Marks: 68

Note: Answer 10 question from this section:

## SECTION "B" (SHORT QUESTIONS ANSWERS)

- Write one contribution of each of the following scientist towards the development in Chemistry.
  - J. Priestly
  - J.J. Berzelliuss
  - John Dalton
- Defen molar mass and calculate the molar mass of  $\text{CaCO}_3$  and  $\text{MgCl}_2$ . (Atomic Masses:  $\text{Ca}=40, \text{C}=12, \text{O}=16, \text{Mg}=24, \text{Cl}=35.5$ )
- What is a chemical reaction? Define single displacement reaction with a relevant chemical equation.
- Balance the following Chemical Equations.
  - $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$
  - $\text{Sb} + \text{Cl}_2 \rightarrow \text{SbCl}_3$
  - $\text{S} + \text{H}_2\text{SO}_4(\text{Conc.}) \rightarrow \text{SO}_2 + \text{H}_2\text{O}$
- Define:
  - Atomic Number
  - Mass Number
  - Avogadro's Number
- Write down three differences between ordinary water and heavy water.
- Define Isotopes and find out the number of neutrons in the following Isotopes.
  - $^{207}_{82}\square\square$
  - $^{242}_{92}\square$
- State Bronsted-Lawry theory of acids and bases with one example of each.
- Write chemical formula of the following Hydrated salts with their water of Crystallization
  - Copper Sulphate
  - Sodium Carbonate
  - Magnesium Sulphate
- Define:
  - Solubility
  - Molarity
  - Molality
- State following laws:
  - Modern Periodic law
  - Henry's Law
  - Graham's Law of diffusion of gases
- A solution contains 2 moles of Ethyl Alcohol and 3 moles of water. Calculate mole fractions of Ethyl Alcohol and Water in this solution.
- Write three uses of graphite. .
- What is change in Enthalpy ( $\Delta H$ )? How does it help to identify the types of thermo-chemical reactions?
- Define Oxidation by three different ways with one suitable example for each.
- Chlorine is naturally found in two stable isotopes  $^{35}_{17}\text{C}$  and  $^{37}_{17}\text{C}$  in the proportion of 75% and 25% respectively. Calculate its atomic mass.
- State the law of multiple proportion and explain it with the help of an example.
- Define neutralization, write down chemical equations of the reaction of  $\text{NaOH}$  with  $\text{HCl}$  and  $\text{CH}_3\text{COOH}$ .
- Define the following:
  - Electrochemical Equivalent
  - Faraday



(iii) pH

20. What are metalloids? Write two differences between metals and non-metals.

21. Define: (i) Paints (ii) Varnishes (iii) Polishes

## SECTION "C" (DETAILED QUESTIONS ANSWERS)

Note: Answer any TWO questions from this Section. Each question carries 14 marks.

22. (a) Describe industrial preparation of Nitric acid ( $\text{HNO}_3$ ) by Ostwald's process with 3 balanced chemical equations.

(b) Define: (i) Hydro Carbons (ii) Aliphatic Hydro Carbons (iii) Alicyclic Hydro Carbons (iv) Aromatic Hydro Carbons.

(c) Write down 4 Characteristics of Covalent Compounds.

23. (a) Describe Laboratory preparation of Chlorine gas by taking manganese dioxide ( $\text{MnO}_2$ ) & Hydrochloric acid ( $\text{HCl}$ ) .Also draw a labeled diagram.

(b) Name the group of the periodic table which contains highly electronegative elements .Also write three common characteristics of this group

(c) Define: (i) Chemical Bond (ii) Ionic Bond (iii) Covalent bond (iv) Co-ordinate covalent bond.

24. (a) Describe electrolytic refining of Blister copper with labeled diagram.

(b) Describe the following methods to remove hardness in water.

- Clark's Method
- By using Zeolite Permutit

(c) Define Oxides classifies Oxides on the basis of oxidation state of oxygen in the three groups with one example of each