DHAKA COACHING CENTRE

# GRAND TEST 2020-2021

**Class: XII** **Max. Marks: 85**
**Paper: Chemistry** **Duration: 2 Hours**

## Section "A" (COMPULSORY)
## MULTIPLE CHOICE QUESTIONS (MCQ'S) 43 Marks

**Q.1. Choose the correct answer for each of the following from the given options:**

**1.** The number of valence electrons in the elements of IIA group is:
a) 1 b) 2 c) 3 d) 5

**2.** All noble gases fulfill the octet rule except:
a) Ne b) Ar c) He d) Xe

**3.** The number of elements in each lanthanide and actinide series is:
a) 2 b) 14 c)18 d) 32

**4.** The metal ion having the highest number of unpaired electrons is:
a) $Mn^{+2}$ b) $Fe^{+2}$ c) $Co^{+2}$ d) $Ni^{+2}$

**5.** The electronic configuration of the outer shell of an element is $4s^2$, $3d^{10}$, $4p^1$. It belongs to:
a) IA group and 3rd period b) IIA group and 4th period
c) IIIA group and 3rd period d) IIA group and 4th period

**6.** Coinage metals are elements of 1B group and these include:
a) Cu, Ag, Au b) Zn, Cd, Hg c) Fe, Co, Ni d) Cu, Zn, Ni

**7.** The number of elements in the 6th period of the periodic table is:
a) 18 b) 24 c) 32 d) 36

**8.** The electronic configuration of noble gases is:
a) $ns^3$ b) $ns^2$ c) $ns^2$, $np^3$ d) $ns^2$, $np^6$

**9.** Hydrogen shows the oxidation state(s):
a) Zero only b) -1 only c) +1 only d) All of these

**10.** Hydride ion and Helium atom have the same:
a) Number of protons b) Number of electrons c) Number of neutrons d) Valency

**11.** An example of electron deficient hydrides is:
a) $BH_3$ b) $NaBH_4$ c) NaH d) $CH_4$

**12.** Hydrides of group IV A are:
a) Acidic b) Basic c) Neutral d) Amphoteric

**13.** Metallic hydrides are also known as:
a) Interstitial hydrides b) Borderline hydrides
c) Ionic hydrides d) Covalent hydrides

**14.** $BeH_2$ and $MgH_2$ are:
a) Covalent hydrides b) Ionic hydrides
c) Polymeric hydrides d) Metallic hydrides

**15.** Sodium reacts with water more vigorously than lithium because it:
a) Has higher atomic weight b) Is more electronegative
c) Is more electropositive d) Is a metal

**16.** This metal forms super oxide:
a) Li b) Be c) K d) Mg

**17.** Brine is a concentrated aqueous solution of:
a) Sodium carbonate b) Sodium sulphate c) Alum d) Sodium chloride

**18.** This has the minimum by hydration energy:

a) $Na^+$ b) $K^+$ c) $Rb^+$ d) $Cs^+$

**19.** On burning in excess of Oxygen, Sodium forms its:

a) Superoxide b) Peroxide c) Monoxide d) Dioxide

**20.** The formula of Dolomite is:

a) $KCl.MgCl_2$ b) $MgSO_4.7H_2O$ c) $MgCO_3.CaCO_3$ d) $MgCO_3$

**21.** Sodium amalgam is an alloy of:

a) Sodium and Lead b) Sodium and Mercury
c) Sodium and Iron d) Sodium and Silver

**22.** Ammonal is a mixture of:

a) Aluminium powder and aluminium nitrate b) Aluminium powder and aluminium sulphate
c) Aluminium powder and sodium nitrate d) Aluminium powder and potassium sulphate

**23.** The chemical name of laughing gas is:

a) Nitric acid b) Nitrous oxide c) Nitrogen trioxide d) Nitrogen pentaoxide

**24.** The chemical formula $Al_2O_3.3H_2O$ stands for:

a) Diaspore b) Corundum c) Bauxite d) Gibbisite

**25.** Royal water is a mixture in the ratio of 1:3 by volume of:

a) HCl, $H_2SO_4$ b) $HNO_3$, HCl c) $H_2SO_4$, $HNO_3$ d) HCl, HF

**26.** This renders Aluminium passive:

a) NaOH b) $HNO_3$ c) HCl d) $H_2SO_4$

**27.** The compounds l – butene and 2 – butene are:

a) Position isomers b) Chain isomers
c) Functional group isomers d) Metamers

**28.** Dimethyl ether and Ethyl alcohol are:

a) Metamers b) Functional group isomers c) Position isomers d) Cis-rans isomers

**29.** Cycloalkanes have the general formula:

a) $C_nH_{2n+2}$ b) $C_nH_{2n}$ c) $C_nH_{2n+2}$ d) $C_nH_{2n+4}$

**30.** Propanal and Propanone are:

a) Chain isomers b) Positon isomers
c) Metamers d) Functional group isomers

**31.** The commercial name of Phenol Formaldehyde Polymer is:

a) Celluloid b) Teflon c) P.V.C d) Bakelite

**32.** The number of isomers of pentane is

a) 3 b) 5 c) 7 d) 9

**33.** The ethyl chloride reacts with alcoholic KOH to give:

a) Ethyl alcohol b) Ethane c) Butane d) Ethene

**34.** Markownikoff's rule will be applicable in the addition of HBr on:

a) $CH_2 = CH_2$ b) $CH \equiv CH$ c) $CH_2 = CHBr$ d) None of them

**35.** This gas was used in the First World War:

a) Phosgene gas b) Mustard gas c) Coal gas d) Ammonia gas

**36.** Ethylene is used as/in:

a) Anaesthetic b) Ripening of fruits c) Preparing Mustard gas d) All of these

**37.** The harmful and undesirable reaction of metals, when exposed to atmosphere or any chemical agent, is known as:

a) Allotropy b) Corrosion c) Electroplating d) Cracking

**38.** EDTA is :

a) Bidentate ligand b) Monodentate ligand c) Chelate d) Polydentate ligand

**39.** It's not a nucleophile:

a) $OH^-$ b) $NH_3$ c) $BF_3$ d) $CN^-$

**40.** The most stable carbonium ion is:

a) $R_3C^{++}$ b) $R_2CH^+$ c) $RCH_2^+$ d) $CH_3^+$

**41.** The percentage by weight of Ethanol in rectified spirit is:

a) 92 – 95 b) 70 – 80 c) 85 – 90 d) 50 – 60

**42.** The sweetest sugar is:

a) Fructose b) Glucose c) Sucrose d) Lactose

**43.** This acid is used for etching of glass:

a) HF b) HCl c) HBr d) HI

## Section "B" (25 Marks)

## SHORT ANSWER SECTION

**Note: Attempt 5 questions from this section. 2 from inorganic and 2 from organic chemistry at least**

## INORGANIC CHEMISTRY

**Q2.**

i. Write the block group and period of the following elements:
17, 24, 29, 49, 38

ii. Explain atomic hydrogen. How it is used for welding purpose? Differentiate between atomic and nascent hydrogen.

**OR**

What are binary compounds of hydrogen? How are they classified? Give preparation and properties of covalent hydrides

iii. Explain the position of hydrogen with group I-A and VII-A

**OR**

Refer to the list of following compounds:

| Compound | A | B | C | D |
|---|---|---|---|---|
| Specific name | Blue vitriol | Alum | Phosgene gas | Alunite |

- Write the formulae of A and D
- The equation for the preparation of C
- Give only one common use of B
- Give the equation A is heated upto 230°C

iv. (a) What is Aqua regia? How does it dissolves gold in it? Show by equations
(b) Explain auto oxidation and reduction reaction of chlorine

v. Describe the preparation of Chlorine gas by Castner-Kellner cell **OR** Nelson cell

vi. Write the I.U.P.A.C names of the following complexes
a. $[Co(en)_3](NO_3)_3$
b. $[Cu(NH_3)_4]^{+2}$
c. $[AuCl_4]^{-1}$
d. $Na_3[Fe(CN)_5NO]$

**OR**

Discuss any two of the following properties of transition metals
a) Magnetic properties b) Colour c) Formation of complexes

## ORGANIC CHEMISTRY

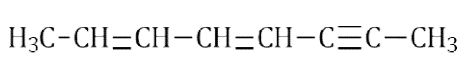
vii. Define isomerism. Give its types with examples **OR** Write the classification of organic compounds with examples

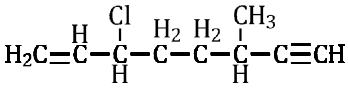
viii. Define Polymerization. How many types of Polymerizations are there? Give the preparation of the following:
. PVC . Bakelite

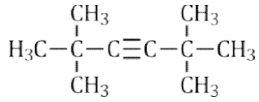
**OR**

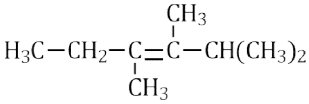
Give the mechanism of these electrophilic substitution reactions of benzene:
a) Friedel-Craft acylation b) Sulphonation

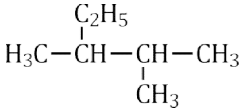
ix. Write down the IUPAC naming of the following:











x. . How will you obtain:

i) Ethane from iodomethane.
ii) Ethene from ethanol.
iii) Ethyne from calcium carbide
iv) 2-Bromo propane from 1-Bromo propane

xi. Draw and explain orbital structure of ethane **OR** ethane

xii. (a) Write equation for the preparation of the following:

- Oxime from formaldehyde
- Acetone from Acetic acid

(b) Complete and balance the following equations:

- HCHO + NaOH ⟶
- H – CHO + $[Ag(NH_3)_2]OH$ →
- $C_2H_5OH + SOCl_2$ →

## Section "C"
## DETAILED ANSWER QUESTIONS (17 Marks)

**Note: Attempt 2 questions from this section. 1 from inorganic and 1 from organic chemistry**

## INORGANIC CHEMISTRY

**Q3.** Describe the extraction of sodium by Down's process

**Q4.** How nitric acid is manufacture by Ostwald's process? Draw diagram

**OR**

Give extraction of 99.99% pure aluminium from bauxite ore containing excess ferric oxide

## ORGANIC CHEMISTRY

**Q5.** What is fermentation? How is Ethyl alcohol is manufactured by the fermentation of:

* Starch * Molasses

Also give preparation of methanol

**OR**

What are nucleophillic substitution reactions? Explain the reaction mechanism of $SN_1$ and $SN_2$ with example. Also explain why tertiary alkyl halides give $SN_1$ mechanism

**Q6.** Give kekule's structure of benzene. Write the objections against it. How were these objections removed

**OR**

What is orientation in benzene? Explain orientation in mono-substituted benzene. Give the names of ortho and meta directors. How will you convert benzene into:

- m-nitro toulene
- o,p nitro toulene