



ATK-21

Sign. Dy. Supdnt.

Fictitious Roll No. (For Office Use)

Sign. Candidate

CHEMISTRY (Group - I) 021/1 (Smart Syllabus)
 (PART - II) (INTERMEDIATE)
 (OBJECTIVE PART) (⚙)

Marks : 17

Time : 20 Minutes

Note:- Write your Roll No. in space provided. Over writing, cutting, using of lead pencil will result in loss of marks. All questions are to be attempted.

1- Each question has four possible answers, Tick (✓) the correct answer. (17)

1	Keeping in view the size of atoms, which order is the correct one;				
A	Mg > Sr	B	Ba > Mg	C Lu > Ce	D Cl > I
2	Which one of the following is not an alkali metal;				
A	Francium	B	Caesium	C Rubidium	D Radium
3	Tincal is mineral of;				
A	Al	B	B	C Si	D C
4	Oxidation of NO in air produces;				
A	N ₂ O	B	N ₂ O ₃	C N ₂ O ₄	D N ₂ O ₅
5	Which halogen will react spontaneously with Au(s) to produce Au ³⁺ ?				
A	Br ₂	B	F ₂	C I ₂	D Cl ₂
6	The anhydride of HClO ₄ is;				
A	ClO ₃	B	ClO ₂	C Cl ₂ O ₅	D Cl ₂ O ₇
7	Which of the following is a typical transition metal;				
A	Sc	B	Y	C Ra	D Co
8	Which set of Hybrid orbitals has planar triangular shape;				
A	sp ³	B	sp	C sp ²	D dsp ²
9	Formula of Chloroform is;				
A	CH ₃ Cl	B	CCl ₄	C CH ₂ Cl ₂	D CHCl ₃
10	During nitration of benzene, the active nitrating agent is;				
A	NO ₃	B	NO ₂ ⁺	C NO ₂	D HNO ₃
11	For which mechanisms, the first step involved is the same;				
A	E1 and E2	B	E2 and S _N 2	C S _N 1 and E2	D E1 and S _N 1
12	Which compound shows Hydrogen Bonding;				
A	C ₂ H ₆	B	C ₂ H ₅ Cl	C CH ₃ - O - CH ₃	D C ₂ H ₅ OH
13	Which of the following compounds will not give iodoform test on treatment with I ₂ /NaOH:				
A	Acetaldehyde	B	Acetone	C Butanone	D 3 - Pentanone
14	The carbon atom of a carbonyl group is;				
A	sp-Hybridized	B	sp ² -Hybridized	C sp ³ -Hybridized	D None of these
15	Which reagent is used to reduce a carboxylic group to an Alcohol;				
A	H ₂ /Ni	B	H ₂ /Pt	C NaBH ₄	D LiAlH ₄
16	The solution of which acid is used for seasoning of food;				
A	Formic Acid	B	Acetic Acid	C Benzoic Acid	D Butanoic Acid
17	Which three Elements are needed for the healthy growth of plants;				

Note:- Attempt any TWENTY TWO (22) short questions in all selecting eight from Q. 2 and Q. 3 each and six from Q. 4. (22 x 2 = 44)

SECTION - I

2- Attempt any eight parts.

(2 x 8 = 16)

i	The hydration energies of the ions are in the following order; $Al^{3+} > Mg^{2+} > Na^+$, give reason.	ii	Ionic character of halides decreases from left to right in a period, comment.
iii	Why is the aqueous solution of Na_2CO_3 alkaline in nature.	iv	Give the decomposition reaction of lithium carbonate and lithium nitrate.
v	Write peculiar behaviour of carbon.	vi	Give the names and the formulas of different acids of Boron.
vii	How will you convert Boric acid into borax and vice versa?	viii	Why the elements of group VI A other than oxygen show more than two oxidation states?
ix	How does nitrogen differ from other elements of its group.	x	Describe the role of nitrogenous fertilizers for plants.
xi	Give any four essential qualities of good fertilizer.	xii	Define cement.

3- Attempt any eight parts.

(2 x 8 = 16)

i	How chlorine dioxide (ClO_2) can be prepared.	ii	Write down the reactions of chlorine with cold and hot NaOH.
iii	Write down the formulas of following (a) Fluorspar (b) Carnallite	iv	What is meant by anode coating?
v	Why oxidation state of transition elements are variable?	vi	What are monocyclic aromatic hydrocarbons. Give at least two examples.
vii	How benzene can be converted into maleic acid by catalytic oxidation.	viii	Write down four uses of Acetaldehyde.
ix	Write the reaction of acetone with (a) HCN (b) $NaHSO_3$	x	Write down the four uses of Acetic acid.
xi	Write down the mechanism for the conversion of carboxylic acid into acetamide.	xii	How would you prepare acetic acid starting from C_2H_5-OH and $CH_3 - C \equiv N$.

4- Attempt any six parts.

(2 x 6 = 12)

i	Define organic chemistry and catenation?	ii	Write names and formulas of any two antiknocking agents?
iii	Write down structural formulas for iso-Butylene and neo-pentane.	iv	Why alkanes are also called paraffins?
v	How does acetylene react with NH_3 and HCN?	vi	What is Wurtz synthesis?
vii	Write down any two differences between E1 and E2 reaction?	viii	How is ethanol made denatured?
ix	Distinguish between methanol and ethanol by a chemical test?		

SECTION - II

Note:- Attempt any three questions.

(8 x 3 = 24)

- 5- (a) What is ionization energy, give an example. How does it vary in groups and periods. (04)
- (b) Describe preparation of sodium metal by Down's cell. (04)
- 6- (a) Enlist any four properties of transition elements. Also explain the properties. (i) Interstitial compounds (ii) Alloy formation. (04)
- (b) Give the reactions of sulphuric acid with: (04)
- (i) Carbon (ii) Sulphur (iii) H_2S (iv) HBr
- 7- (a) Discuss four features of organic compounds. (04)
- (b) Discuss the Aldol condensation reaction with example. Also write its mechanism. (04)
- 8- (a) Prepare alkene by (04)
- (i) Dehydrohalogenation of alkyl Halides.
- (ii) Dehalogenation of vicinal Dihalides.
- (iii) Dehydration of primary Alcohol.
- (iv) By hydrogenation of Alkyne.
- (b) Explain S_N1 reaction with example. (04)
- 9- (a) Convert benzene into (04)
- (i) Maleic anhydride (ii) Glyoxal (iii) Benzoic acid (iv) Cyclohexane
- (b) How will you obtain pure Ethanol by fermentation of starch. (04)