

Time: 2:40 Hours

SUBJECTIVE

40J-91-22

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION – I)

2. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- i. Why oxidation state of noble gases is usually zero?
- ii. Why metallic character increases from top to bottom in group?
- iii. Define alkali and alkaline earth metals.
- iv. Why is the aqueous solution of  $\text{Na}_2\text{CO}_3$  alkaline in nature?
- v. Write down four uses of silicones.
- vi. Why  $\text{CO}_2$  is acidic in character?
- vii. How does nitrogen differ from other elements of its group?
- viii. Give methods of preparation of  $\text{PCl}_3$ .
- ix. How chromate ions are converted into dichromate ions?
- x. Define ligand. Give one example.
- xi. Discuss ammonia as a fertilizer.
- xii. Define cement, Write down names of its important raw materials.

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- i. Why HF is weak acid than that of HI?
- ii. Write down any four uses of bleaching powder.
- iii. Define cis-trans isomerism. Give one example.
- iv. How wood can be converted into anthracite?
- v. How will you convert i) Ethene into ethane ii) Ethyne into ethene
- vi. How does propyne react with the following reagents?  
i)  $\text{AgNO}_3 / \text{NH}_4\text{OH}$  ii)  $\text{Cu}_2\text{Cl}_2 / \text{NH}_4\text{OH}$
- vii. Why alkenes are more reactive than alkanes?
- viii. Write down any two differences between  $\text{E}_1$  and  $\text{E}_2$  reactions.
- ix. What is Grignard reagent? How it can be prepared?
- x. Define proteins. Give any two importance of proteins.
- xi. Define iodine number and acid number.
- xii. Write down any four importance of lipids.

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- i. Give the mechanism of sulphonation of benzene.
- ii. Give two methods for the preparation of benzene in laboratory.
- iii. How phenol reacts with dil. and conc.  $\text{HNO}_3$ ?
- iv. Dehydration of ethyl alcohol occur under different conditions. Give reactions.

(Turn Over)

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- v. Give any four uses of formaldehyde.
- vi. How would you convert acetic acid into i) acetyl chloride ii) acetic anhydride
- vii. What are essential and non-essential amino acids?
- viii. What are primary pollutants? Give examples.
- ix. Give any four causes of water pollution.

**(SECTION - II)**

**Note: Attempt any THREE (3) questions from Section II.**

- 5. (a) Define the oxides. Classify the oxides on the basis of their acidic and basic character. (4)  
(b) Discuss briefly triplumbic tetraoxide ( $Pb_3O_4$ ) and lead dioxide ( $PbO_2$ ). 2+2 (4)
- 6. (a) Write down any eight points regarding the peculiar behaviour of lithium. (4)  
(b) Explain the electrochemical theory of corrosion. (4)
- 7. (a) What is orbital hybridization? Explain  $SP^3$  hybridization with example. (4)  
(b) Define nucleophilic substitution reaction and discuss the  $S_N1$  reaction in detail. (4)
- 8. (a) Discuss the Kolbe's electrolysis method for the preparation of alkene. (ethene) (4)  
(b) Explain the mechanism of cannizzaro's reaction with one example. (4)
- 9. (a) How will you prepare benzene from 1x4 (4)
  - i) cyclohexane ii) n-hexane
  - iii) phenol iv) acetylene  
(b) Define alcohols. How different types of alcohols are differentiated by Lucas test. 1+3 (4)

Roll No. of Candidate : \_\_\_\_\_

**CHEMISTRY**

(Intermediate Part-II , Class 12<sup>th</sup> ) 422 - (I) Paper II (Group – II)

**Time: 20 Minutes**

**OBJECTIVE** ..... **Code: 8482** **445A2-22** Marks: 17

**Note:** You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank.

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. The oxides of beryllium are \_\_\_\_\_ .  
(A) acidic (B) basic (C) amphoteric (D) none of these
3. Which element is used in the thermite process because of its reactivity?  
(A) iron (B) copper (C) aluminium (D) zinc
4. Laughing gas is chemically \_\_\_\_\_ .  
(A) NO (B) N<sub>2</sub>O (C) NO<sub>2</sub> (D) N<sub>2</sub>O<sub>4</sub>
5. Hydrogen bond is the strongest between the molecules of \_\_\_\_\_ .  
(A) HF (B) HCl (C) HBr (D) HI
6. The total number of transition elements is \_\_\_\_\_ .  
(A) 10 (B) 14 (C) 40 (D) 58
7. The state of hybridization of carbon atom in methane is \_\_\_\_\_ .  
(A) SP<sup>3</sup> (B) SP<sup>2</sup> (C) SP (D) dSP<sup>2</sup>
8. Formula of chloroform is \_\_\_\_\_ .  
(A) CH<sub>3</sub>Cl (B) CCl<sub>4</sub> (C) CH<sub>2</sub>Cl<sub>2</sub> (D) CHCl<sub>3</sub>
9. During nitration of benzene, the active nitrating agent is \_\_\_\_\_ .  
(A) NO<sub>3</sub> (B) NO<sub>2</sub><sup>+</sup> (C) NO<sub>2</sub><sup>-</sup> (D) HNO<sub>3</sub>
10. For which mechanism the first step involved is same?  
(A) E<sub>1</sub> and E<sub>2</sub> (B) E<sub>2</sub> and S<sub>N</sub>2 (C) S<sub>N</sub>1 and E<sub>2</sub> (D) E<sub>1</sub> and S<sub>N</sub>1
11. Which compound shows hydrogen bonding?  
(A) C<sub>2</sub>H<sub>6</sub> (B) C<sub>2</sub>H<sub>5</sub>Cl (C) CH<sub>3</sub>OCH<sub>3</sub> (D) C<sub>2</sub>H<sub>5</sub>OH
12. Which of the following will have the highest boiling point?  
(A) methanal (B) ethanal (C) propanal (D) 2-hexanone
13. Acetic acid is manufactured by \_\_\_\_\_ .  
(A) distillation (B) fermentation (C) ozonolysis (D) esterification
14. Which of these polymers is an addition polymer?  
(A) nylon - 6, 6 (B) polystyrene (C) terylene (D) epoxy resin
15. Phosphorus helps the growth of \_\_\_\_\_ .  
(A) root (B) leaf (C) stem (D) seed
16. The pH range of the acid rain is \_\_\_\_\_ .  
(A) 7 - 6.5 (B) 6.5 - 6 (C) 6 - 5.6 (D) less than 5
17. Which one heavy metal is highly toxic and does not has safe limit?  
(A) Hg (B) Ca (C) Mg (D) Al

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Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

(SECTION – I)**2. Write short answers to any EIGHT questions.****(2 x 8 = 16)**

- i. Why the second value of electron affinity of an element is usually shown with a positive sign?
- ii. Lanthanide contraction controls the atomic sizes of elements of 6<sup>th</sup> and 7<sup>th</sup> periods. Give reason briefly.
- iii. KO<sub>2</sub> is used in breathing equipments for mountaineers and in space crafts, why?
- iv. Aqueous solution of Na<sub>2</sub>CO<sub>3</sub> is alkaline in nature. How it can be justified?
- v. What is the structure of CO<sub>2</sub> and SiO<sub>2</sub> and why they differ from each other?
- vi. How boric acid is prepared on commercial scale from colemanite?
- vii. How moderately dilute and conc. HNO<sub>3</sub> reacts with zinc?
- viii. Why is SO<sub>3</sub> dissolved in H<sub>2</sub>SO<sub>4</sub> and not in water?
- ix. What is chromyl chloride test?
- x. What is sacrificial corrosion?
- xi. How digestion process is carried out in paper industry?
- xii. What reactions take place in the setting of cement from 01 to 07 days?

**3. Write short answers to any EIGHT questions.****(2 x 8 = 16)**

- i. What is Teflon? Write down its formula and uses.
- ii. Bleaching powder acts as an oxidizing agent. Explain.
- iii. Define metamerism. Give an example.
- iv. What are heterocyclic compounds? Give two examples.
- v. How methane and ethane can be prepared from sodium acetate?
- vi. Write down any two uses of ethyne.
- vii. State and explain Markownikov's rule with an example.
- viii. What is Grignard's reagent? How it can be prepared?
- ix. Define nucleophile by giving its two examples.
- x. How is polystyrene prepared? Give its two uses.
- xi. What is meant by denaturation of proteins?
- xii. Write down names of nitrogenous bases present in DNA.

**4. Write short answers to any SIX questions.****(2 x 6 = 12)**

- i. How can you prepare m-chloronitrobenzene from benzene?
- ii. Draw the structure of anthracene and phenanthrene.
- iii. What is Dow's method?
- iv. What do you mean by denaturing of alcohol?

**(Turn Over)**

- v. Write down four uses of formaldehyde. *407-92-22*
- vi. What are essential and non-essential amino acids?
- vii. Why the boiling points of carboxylic acids are relatively high?
- viii. How is oil spillage affecting the marine life?
- ix. What is biological oxygen demand (BOD)?

**(SECTION - II)**

**Note: Attempt any THREE (3) questions from Section II**

5. (a) Explain periodic trends in the following physical properties: (4)  
i) Ionization energy                      ii) Metallic character
- (b) Discuss the importance of oxides of lead in paints. (4)
6. (a) Write down names and formulas of four minerals of sodium. 1x4 (4)  
(b) Give systematic names to following complexes. 1x4 (4)  
i)  $\text{Na}_3[\text{CoF}_6]$                       ii)  $\text{K}_2[\text{PtCl}_6]$   
iii)  $[\text{Cr}(\text{OH})_3(\text{H}_2\text{O})_3]$               iv)  $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
7. (a) Define hybridization. Explain SP hybridization with the formation of ethyne. (4)  
(b) Compare  $\text{S}_{\text{N}}1$  reactions with  $\text{S}_{\text{N}}2$  reactions by four points. (4)
8. (a) Give the mechanism of the following reactions: 2+2 (4)  
i) Ethene with  $\text{Br}_2$                       ii) Ethene with ozone
- (b) What are condensation reactions? Explain the mechanism of Aldol condensation. 1+3 (4)
9. (a) Write down four methods of preparation of benzene. (4)  
(b) Write down reactions of phenol in which benzene ring is used. (4)