

Total No. of Questions : 28]

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**XIIKDAR21**  
**5002-C**  
**CHEMISTRY**

Time : 3 Hours]

[Maximum Marks : 70

**Section-A**

**(Very Short Answer Type Questions)**

1 each

1. What is the number of atoms per unit cell in a body centred cubic structure ?
2. Protective sols are :  
(A) Lyophilic  
~~(B)~~ Lyophobic .  
(C) Both (A) and (B)  
(D) None of these
3. Calculate the oxidation number of Cu in  $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ .

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**B-2-C**

**Turn Over**

( 2 )

4. Write the IUPAC name of  $\text{CH}_3\text{OCH}_2\text{CH}_2\text{Cl}$ .
5. Which of the following will undergo aldol condensation ?
- (A)  $\text{CH}_2 = \text{CHCHO}$
- (B)  $\text{CH} \equiv \text{C}.\text{CHO}$
- (C)  $\text{C}_6\text{H}_5\text{CHO}$
- (D)  $\text{CH}_3\text{CH}_2\text{CHO}$
6. Complete the following reaction :
- $$2\text{CONH}_2 + \text{Br}_2 + 4\text{NaOH} \rightarrow \dots\dots\dots$$
7. Out of sucrose and maltose, sucrose is a reducing sugar.

(True/False)

### Section-B

#### (Short Answer Type Questions-I)

2 ea

8. Define molar conductivity and give its S.I. units.
9. What is order of reaction ? Give *one* example each for 1st order and 2nd order reactions.
10. How is  $\text{KMnO}_4$  prepared from pyrolusite ore ?

( 3 )

*Or*

Transition metals and their compounds act as good catalysts. Explain.

11. Define the following terms with examples :

(a) Chelating ligands

(b) Central metal atom ion

*Or*

Explain coordination isomerism in coordination compound with an example.

12. Give any two chemical reactions of chlorobenzene.

13. What are the important uses and environmental effects of Carbon tetrachloride ?

### Section-C

(Short Answer Type Questions-II)

3 eac

14. Define *n*-type and *p*-type semiconductors with examples.

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**B-2-C**

Turn Over

15. State and explain Faraday's second law of electrolysis.
16. Discuss the effect of temperature on the rate of reaction.
17. What is Chemical Adsorption ? Discuss the main characteristics of chemical adsorption.
18. Give a brief account of calcination and roasting.
19. Name the elements of group 15 and discuss their oxidation states.
20. What is Lanthanoid Contraction ? Explain the cause of lanthanoid contraction.
21. Give the chemical reactions of ethyl alcohol with :
- (i) Conc.  $\text{H}_2\text{SO}_4$  at 440K
  - (ii)  $\text{CH}_3\text{COOH}$
  - (iii)  $\text{CH}_3\text{MgBr}$
22. What are Amines ? How are they classified ? Give one example of each type.

Or

How is aniline prepared from (i) Nitrobenzene (ii) Benzamide (iii) Phenyl cyanide ?

23. What are Carbohydrates ? How are they classified on the basis of hydrolysis products ?

*Or*

Differentiate between fibrous and globular proteins.

24. Define the following with examples :

- (i) Addition polymerisation
- (ii) Condensation polymerisation

*Or*

What is Nylon-66 ? Give its preparation and uses.

25. Name the substance which can act both analgesic and antipyretic as well. How does it help heart patients ? What precautions must be taken while taking it ?

*Or*

Describe the following with suitable examples :

- (i) Artificial sweeteners
- (ii) Antioxidants

**Section-D**

**(Long Answer Type Questions)**

26. Explain the terms :

- (i) Freezing point of a liquid
- (ii) Depression in freezing point of a solution
- (iii) Molal depression constant

Derive the relationship between the depression in freezing point and molecular mass of a non-volatile solute. <https://www.jkboseonline.com>

*Or*

What are Non-ideal Solutions ? Show graphically the behaviour of solutions showing positive and negative deviations. Explain the reasons for their positive and negative deviation.

27. Draw the structures of oxoacids of sulphur and write their names.

*Or*

Give any *two* methods of preparation of chlorine and any *two* chemical reactions. Also give uses of chlorine.

28. How can you prepare acetaldehyde from ethanol and acetic acid ?

How does acetaldehyde reacts with (i) Ammoniacal  $\text{AgNO}_3$

(ii)  $\text{NH}_2\text{OH}$  (iii)  $\text{HCN}$  ?

*Or*

Write the chemical equations when :

- (i) Acetic acid reacts with  $\text{Br}_2$  in the presence of phosphorus
- (ii) Acetic acid reacts with methanol in the presence of  $\text{H}_2\text{SO}_4$
- (iii) Acetic acid reacts with  $\text{SOCl}_2$
- (iv) Acetic acid reacts with  $\text{LiAlH}_4$
- (v) When acetic acid reacts with chlorine in the presence of red phosphorous

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