

## Model Question Paper

Roll No ..... SOS (Session : 2020-21) (10+2) Class

### (Chemistry)

**Total no. of questions : 28**

**Time Allowed : 3 hrs**

**Maximum Marks : 75**

Candidates are required to Answer in their own words as far as practicable. Marks allotted to each question are indicated against it.

#### Special Instructions:-

- (i) You must indicate on your answer book the same question no. as appears in your question paper.
  - (ii) All questions are compulsory. Internal choices have been given in some questions.
  - (iii) Q. No. 1 to 10 are multiple choice types questions (MCQ) carrying 1 marks each
  - (iv) Q. No. 11 to 20 are very short answer types questions carrying 3 marks each
  - (v) Q. No. 21 to 25 are Short answer types questions carrying 4 marks each
  - (vi) Q. No. 26 to 28 are shrot answer types questions carrying 5 marks each
  - (vii) Use of log tables is allowed.
  - (viii) Calculator is not allowed
1. The co-ordination number of metal crystallising in a hexagonal close packing is
- |        |         |
|--------|---------|
| (a) 12 | (b) 4   |
| (c) 8  | (d) (6) |

2. The mole fraction of glucose in 10% w/w glucose solution is 1  
 (a) 0.01 (b) 0.02  
 (c) 0.03 (d) 0.04
3. Units of cell constant is 1  
 (a)  $s^{-1}$  (b)  $\text{mol}^{-1} s^{-1}$   
 (c)  $\text{cm}^{-1}$  (d)  $L^{-1}$
4. Units of rate constant for zero order reaction is 1  
 (a)  $s^{-1}$  (b)  $\text{mol L}^{-1}$   
 (c)  $\text{mol L}^{-1} s^{-1}$  (d)  $L^{-1} \text{mol}^{-1} s^{-1}$
5. Shape selective catalysis is a reaction catalysed by 1  
 (a) zeolites (b) enzymes  
 (c) platinum (d) ziegler-natta catalyst
6. Heating pyrites to remove sulphur is called 1  
 (a) smelthing (b) roasting  
 (c) calcination (d) liquation
7. Which of the following is not present in RNA? 1  
 (a) uracil (b) thymine  
 (c) cytosine (d) guanine
8. Which of the following transition metal ions has highest magnetic moment. 1  
 (a)  $\text{Cu}^{2+}$  (b)  $\text{Ni}^{2+}$   
 (c)  $\text{CO}^{2+}$  (d)  $\text{Fe}^{2+}$
9. Which of the following ligands will not show chelating effect. 1  
 (a) EDTA (b) DMG  
 (c) ethane-1,2-diamine (d)  $\text{SCN}^{-}$
10. Deficiency of vitamin 'B' causes: 1  
 (a) anaemia (b) beri-beri  
 (c) night blindness (d) scurvy

11. What do you mean by imperfection in solids? Discuss metal excess defect in detail. 3
12. Calculate the mole fraction of benzene in solution containing 30% by mass in  $\text{CCl}_4$ . 3

**Or**

Show that depression in freezing point is a colligative property. How will you calculate molar mass of solute from depression in freezing point? 3

13. Discuss Faraday's laws of electrolysis with example. 3
14. Give any three points of difference between order of reaction and molecularity. 3

**Or**

Derive integrated rate equation for first order reaction. 3

15. Discuss the structure, hybridisation and magnetic properties of  $[\text{Ni}(\text{CN})_4]^{2-}$  complex on basis of valence bond theory. 3
16. (a) What are reducing and non reducing sugars? 2
- (b) Why  $\text{N}_2$  is practically unreactive at room temperature. 1
17. (a) How will you convert ethyl alcohol into ethyl chloride. 1
- (b) Write short note on Swarts reaction. 1
- (c) Write short note on Sandmeyer's reaction. 1

**Or**

- (a) Write short note on Markovnikov's rule. 1
- (b) How will you convert propene to propan-1-ol. 1
- (c) Write short note on Finkelstein reaction. 1
18. (a) Why do transition metals exhibit variable oxidation states. 2

**Or**

What is lanthanoid contraction? What are its consequences. 2

- (b) Calculate spin only magnetic moment of  $\text{M}^{2+}(\text{aq})$  ion. The atomic no of M is 27. 1
19. Write a note on cleansing action of soap. 3

**Or**

- Discuss process of dialysis with help of a diagram. 3
20. How will you distinguish between primary, secondary and tertiary alcohols. 3
21. (a) What do you mean by metallurgy. What do you think is the difference between ore and mineral. 2  
(b) Write short note on magnetic separation. 2

**Or**

- (a) Discuss process of leaching of alumina from bauxite. 2  
(b) What is the difference between calcination and roasting? 2
22. (a) Discuss structure of carboxyl group in detail. 2  
(b) What is difference between thermoplastic and thermosetting polymers? 2

**Or**

- (a) Explain why carboxylic acid is a stronger acid than phenol? 2  
(b) Write down the synthesis of Nylon 6,6. 2
23. (a) Discuss Gabriel phthalimide synthesis. 2  
(b) Write short note on natural rubber. 2

**Or**

- (a) Discuss Hoffmann bromamide degradation reaction. 2  
(b) What are elastomers? Discuss in detail. 2
24. (a) Discuss synthesis and structure of  $\text{XeF}_4$ . 2  
(b) Which is a stronger reducing agent  $\text{Cr}^{2+}$  or  $\text{Fe}^{2+}$ ? 1  
(c) What do you mean by Brownian movement? 1

**Or**

- (a) Why are the elements of group 18 known as noble gases? 2  
(b) Name an element of lanthanoid series which is well known to exhibit +4 oxidation state. 1  
(c) What do you mean by Tyndall effect? 1

25. (a) Define order of a reaction? 1  
 (b) Why do we need to classify drugs in different ways. 1  
 (c) Complete the reaction. 1  

$$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{O} - \text{CH}_3 + \text{HBr} \rightarrow$$
  
 (d) Why is ICl more reactive than  $\text{I}_2$ . 1
26. (a) A hydrocarbon X does not react with chlorine in dark but gives a single monochloro compound  $\text{C}_5\text{H}_9\text{Cl}$  in bright sunlight. Identify the hydrocarbon. 2  
 (b) What are biodegradable polymers. 2  
 (c) Noble gases have very low boiling points, why? 1
27. (a) Write chemical reaction for the following 2  
 (i) Etard reaction (ii) Cannizzaro reaction.  
 (b) How will you convert benzene into aniline? 1  
 (c) Give structure of zwitter ion. 1  
 (c) What do you mean by the term "acid rain"? 1
28. (a) What are antibiotics? Give example. 2  
 (b) Write chemical equation of carbylamine reactions. 1  
 (c) Write IUPAC name of acetaldehyde. 1  
 (d) What is wood spirit? 1