

Series-C

Term-1-Exam.-2022

T-1-855-C

Roll No.

Total No. of Questions-33]. [Total No. of Printed Pages-8

T-1-855-C-XII-2922

CHEMISTRY

(English Version)

Time Allowed-3 Hours

Maximum Marks-50

Candidates are required to give their answers in their own words as far as practicable.

Marks allotted to each question are indicated against it.

Special Instructions :

- (i) *You must write question-paper series in the circle at the top left side of title page of your answer-book.*
- (ii) *While answering your questions, you must indicate on your answer-book the same question no. as appears in your question-paper.*

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[P.T.O.]

(iii) Do not leave blank page/pages in your answer book.

(iv) All questions are compulsory.

(v) Internal Choices are given in some questions.

(vi) Question no. 1-20 carry 1 mark, question 21-29 carry 2 marks, question 30-33 are of 3 marks.

1. For body centred cubic, the edge length is equal to

(a) $2\sqrt{2}r$

(b) $2r$

(c) $\frac{\sqrt{3}}{4}r$

(d) $\frac{4}{\sqrt{3}}r$

2. In body centred cubic unit cell, the number of atoms present are :

(a) 1

(b) 2

(c) 3

(d) 4

3. Packing efficiency in hcp structures is :

(a) 68%

(b) 52.4%

(c) 74%

(d) None of these

Freezing point of a solvent containing a non-volatile solute :

- (a) is depressed (b) is elevated
(c) does not change (d) None of these

5. Which of the following is independent of temperature ?

- (a) Molarity (b) Molality
(c) Formality (d) Normality

6. Which of the following is unitless :

- (a) Molarity (b) Normality
(c) Density (d) Mole fraction

7. Laughing gas is :

- (a) NO_2 (b) N_2O_5
(c) N_2O (d) N_2O_4

8. General electronic configuration of group 15 element is

- (a) $ns^2 np^3$ (b) $ns^2 np^5$
(c) $ns^2 np^1$ (d) $ns^2 np^4$

9. Hydrogen bonding is present in :

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

10. Maximum covalency of Oxygen is :

- (a) 3 (b) 2
(c) 4 (d) 5

11. The most abundant element in the earth's crust is :

- (a) Oxygen (b) Nitrogen
(c) Carbon (d) Sulphur

12. The method used for concentration of sulphide ore is

13. $R-X + Na + Ar-X \xrightarrow{\text{dry ether}} \dots\dots\dots$

14. Which of the following alkyl halide undergoes the fastest S_N^1 reaction :

- (a) Methyl Chloride (b) Ethyl Chloride
(c) Isobutyl Chloride (d) Tert-Butyl Chloride

15. Phenol upon distillation with Zn dust gives

16. The Chemical formula of vitamin B₆ is

17. Phenols are acids than carboxylic acid.

18. Which of the following is not a protein ?

- | | |
|----------|----------|
| (a) Wool | (b) Nail |
| (c) Hair | (d) DNA |

19. Nucleotides are joined together by

20. Which of the following is a homopolymer ?

- | | |
|---------------|--------------|
| (a) Polythene | (b) Nylon-66 |
| (c) Buna-S | (d) Buna-N |

20×1=20

21. (a) Why does OF₆ not exist but SF₆ exist ?

(b) Define inert pair effect. 1+1=2

22. (a) Give the geometry of BrF₃ and XeO₃.

(b) H₂SO₄ is viscous in nature. Why ? 1+1=2

23. Explain zone refining method for the purification of metals. 2

24/ (a) Give chemical reaction of Sandmeyer's reaction.

(b) What are enantiomers ?

1+1=2

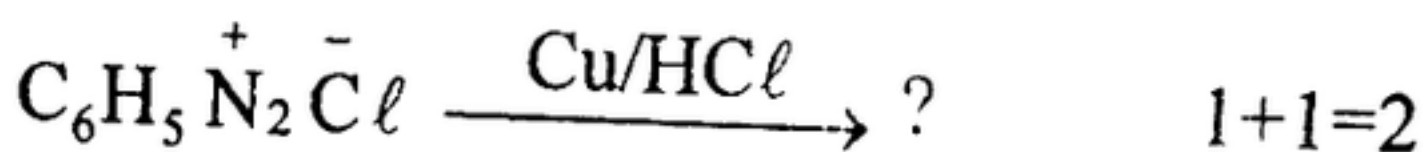
25. (a) Write short note on β -elimination reaction.

(b) Write IUPAC name of Isobutyl Chloride.

1+1=2

26. (a) Convert Benzene to Chlorobenzene.

(b) Complete the reaction



1+1=2

or

Haloarenes are very slightly soluble in water.

Why ?

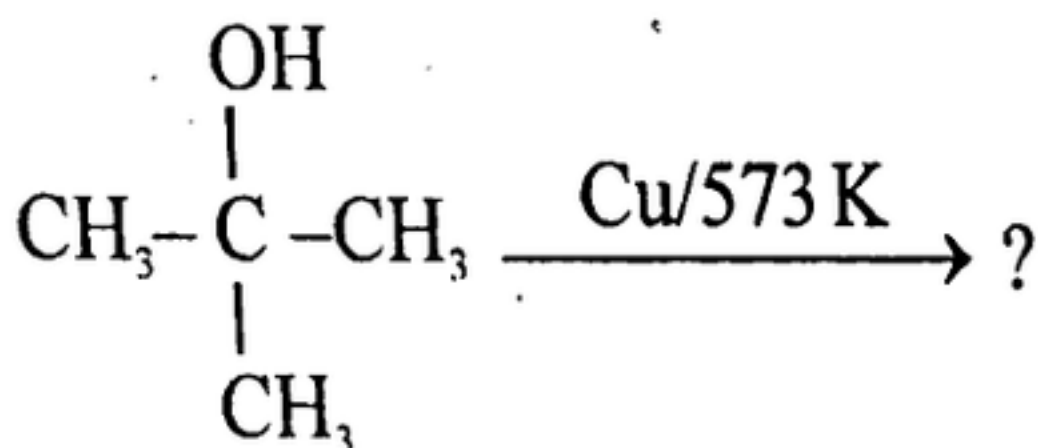
27/ Give Lucas test to distinguish between primary, secondary and tertiary alcohols.

2

28. (a) Write Chemical reaction of Reimer-Tiemann reaction.

- (b) Write chemical reaction for the preparation of phenol from Chlorobenzene. 1+1=2

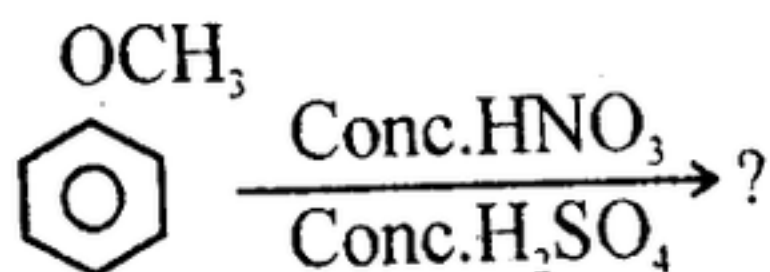
29. (a) Complete the reaction



- (b) What happens when phenol is treated with Conc. HNO_3 ? 1+1=2

or

(a) Complete the reaction



- (b) How will you convert Benzyl Chloride into Benzyl alcohol? <https://>

30. (a) What are primitive unit cells and centred unit cells?

(b) Define anisotropy. 2+1=3

31. (a) What is depression of freezing point? Prove that it is a colligative property.

(b) Define van't Hoff factor. $2+1=3$

or

(a) The boiling point of benzene is 353.23K. When 1.80 gm of a non-volatile solute was dissolved in 90gm of benzene, the boiling point is raised to 354.11K. Calculate the molar mass of the solute. K_b for benzene is $2.53 \text{ K kg mol}^{-1}$

(b) Define Molarity.

32. (a) Differentiate between fibrous proteins and globular proteins.

(b) What is zwitter ion? $2+1=3$

33. (a) Differentiate between addition and condensation polymerisation.

(b) Give the preparation of Bakelite. $2+1=3$