

Series–A

Term-1-Exam.-2022

T-1-855-A

Roll No.

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

T-1-855-A-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 hcp lattice, 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 face centred cubic unit cell, the number of atoms present are :

(a) 1

(b) 2

(c) 3

(d) 4

3. Packing efficiency in ccp structures is :

(a) 74%

(b) 68%

(c) 52.4%

(d) None of these

4. The boiling point of a solvent containing non-volatile solute :
- (a) is depressed ~~(b)~~ is elevated
(c) does not change (d) none of these
5. Molal elevation constant is also called as
- (a) Cryoscopic constant
(b) Gas constant
~~(c)~~ Ebullioscopic constant
(d) Freezing point depression constant
6. Isotonic solutions have
- (a) Same boiling point
(b) Same vapour pressure
~~(c)~~ Same osmotic pressure
(d) Same melting point
7. Which of the following has highest ionization enthalpy :
- (a) P ~~(b)~~ N
(c) As (d) Sb

8. General electronic configuration of group 16 elements is :

- (a) $ns^2 np^1$ (b) $ns^2 np^2$
(c) $ns^2 np^4$ (d) $ns^2 np^6$

9. The basicity of phosphorous acid is :

- (a) Two (b) Three
(c) One (d) Zero

10. Maximum covalency of sulphur is :

- (a) 2 (b) 4
(c) 6 (d) 5

11. Purest form of Iron is :

- (a) Cast Iron (b) Wrought Iron
(c) Steel (d) Pig Iron

12. Bauxite is an ore of

13. $R-Cl + NaI \xrightarrow[\text{Reflux}]{\text{Acetone}}$

14. Freon - 12 is :

- (a) CF_2Cl_2 (b) CHF_2Cl_2
(c) $CFCl_3$ (d) CF_3Cl

15. The chemical formula of wood spirit is
16. The Chemical name of vitamin B₁ is
17. Dehydration of ethyl alcohol with Conc. H₂SO₄ at 413K gives
18. Which of the following is not present in DNA ?
- (a) Adenine ~~(b)~~ Uracil
- (c) Cytosine (d) Guanine
19. The secondary structure of protein is stabilized by
20. Which of the following is not a polymer ?
- (a) Dacron (b) Nylon-6
- (c) Rubber ~~(d)~~ Chlorophyll

20×1=20

~~21. (a)~~ Why H₂SO₄ is called king of Chemicals ?

~~(b)~~ HI is stronger acid than HF Why ? 1+1=2

~~22.~~ (a) Give the geometry of XeF_4 and XeF_6 .

(b) Boiling point of H_2O is very much higher than H_2S . Give reason. 1+1=2

~~23.~~ Define calcination and roasting with suitable example. 2

~~24.~~ (a) Give chemical reaction of Finkelstein reaction.

(b) Define racemisation. 1+1=2

~~25.~~ (a) Write Friedel Crafts alkylation reaction of chlorobenzene.

(b) Write IUPAC name of Isopropylchloride.

1+1=2

~~26.~~ (a) Convert chlorobenzene into phenol.

(b) Complete the reaction



or

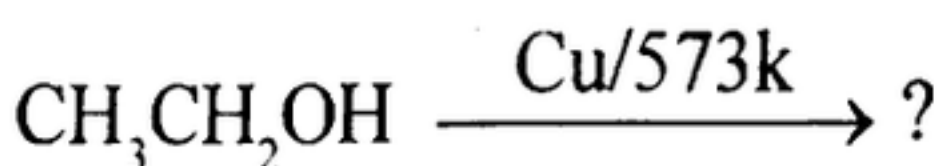
Alkyl halides are extremely less reactive towards nucleophilic substitution reactions. Why? 7

~~27.~~ Alcohols are weaker acids than water. Why? 2

~~28.~~ (a) Write chemical reaction of Williamson's synthesis reaction.

(b) Write esterification reaction. 1+1=2

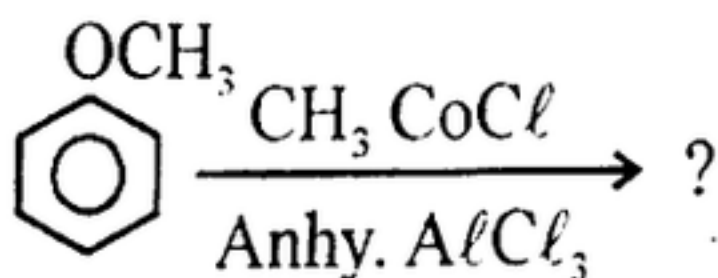
29. (a) Complete the reaction



(b) What happens when phenol is treated with dil. HNO_3 at low temperature (298 K) 1+1=2

or

(a) Complete the reaction



~~(b)~~ How will you convert Propene into Propan-2-ol.

~~30.~~ (a) Write four points of differences between Schottky defect and Frenkel defect.

~~(b)~~ Define doping. 2+1=3

~~31.~~ (a) What is relative lowering of vapour pressure ? Prove that it is a colligative property.

(b) Define Henry's law. 2+1=3

or

(a) 1.00 gm of a non-electrolyte solute dissolved in 50 gm of benzene lowered the freezing point of benzene by 0.40 K. The freezing point depression constant of benzene is 5.12 K kg mol⁻¹. Find the molar mass of the solute.

(b) Define molality.

~~32.~~ (a) What are essential and non-essential amino acids ?

(b) Name the Vitamin responsible for the coagulation of blood. 2+1=3

~~33.~~ (a) Distinguish between the homopolymers and copolymers.

(b) Give the preparation of Nylon-66. 2+1=3