

GURU HARKRISHAN PUBLIC SCHOOL
 TERMINAL EXAMINATION (2015 - 2016)

CLASS - XII

SUBJECT - CHEMISTRY

TIME: 3 HOURS

M.M: 70

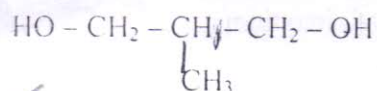
General Instructions:

- All questions are compulsory.
- Q1-Q5 1 mark each
- Q6-Q10 2 marks each
- Q11-Q22 3 marks each
- Q23 4 marks each
- Q24-Q26 5 marks each

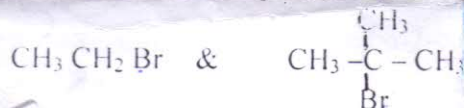
1. Write a method by which lyophobic colloids can coagulated.

2. What is the formula of a compound in which the element Y forms hcp lattice & atoms of 'X' occupy $\frac{2}{3}$ rd of tetrahedral voids.

3. Write the IUPAC name of the given compound



4. Which would undergo $\text{S}_\text{N}1$ reaction faster in the following pair & why?



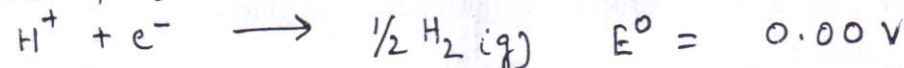
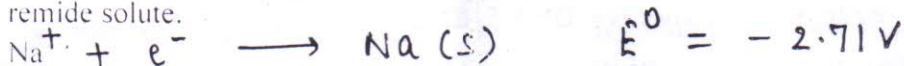
5. Write the structure of 4 chloropentane-2-one.

6. State Henry's law, why do gases tend to be less soluble in liquids as the ^{temperature} is raised.

Or

State Raoult's law for the solution containing volatile components. Write 2 differences between an ideal solution and non ideal solution.

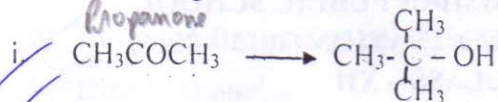
7. a) Following reaction occur at cathode during the electrolysis of aqueous sodium chloride solution.



On the basis of their standard reduction electrode potential E° values, which reaction is feasible at the cathode and why?

b) Why does the cell potential of Mercury cell remain constant throughout its life?

8. Name the reagents used in the following reaction



2 dimethyl ethanol



9. Calculate the amount of CaCl_2 (Molar mass 111 g/mol) which must be added to 500 g of water to lower its freezing point by 2 K, assuming CaCl_2 is completely dissociated.

(K_f for water = 1.86 K Kg mol⁻¹)

10. An element with density 10 g/cm³ forms a cubic unit cell with edge length of 3×10^{-8} cm. What is the nature of the cubic unit cell if the atomic mass of element is 81 g/mol.

11. Calculate EMF of the following cell at 25°C Sn/Sn²⁺ (0.001 M) || H⁺ (0.01 M)/H₂(g)

1 bar/Pt (1) $E^0_{\text{Sn}^{2+}/\text{Sn}} = -0.14 \text{ V}$ $E^0_{\text{H}_2/\text{H}^+} = 0.00 \text{ V}$

12. Give reasons for the following observations

- Physisorption decreases with increase in temperature.
- Addition of alum purifies the water.
- Brownian Movement provides stability to the colloidal solution.

13.

- Name the method used for the refining of zirconium.
- What is the role of CO in the extraction of iron.
- Reduction of metal oxide to metal becomes easier if the metal obtained is in liquid state. Why?

14. Give reasons for the following

- Aniline does not undergo Friedel-Crafts reaction.
- p-methyl aniline is more basic than p-nitro aniline.
- Acetylation of NH₂ group is done in aniline before preparing its ortho & para compounds.

15. Write the product obtained when D-glucose reacts with Br₂ water.

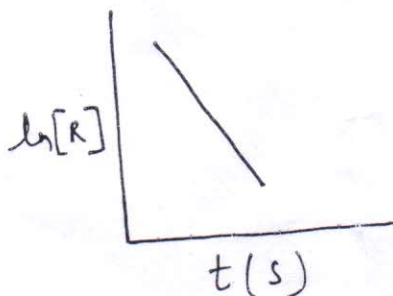
ii) What type of linkage is present in proteins.

iii) Write one difference b/w DNA & RNA.

16. Write the names and structures of the following polymers

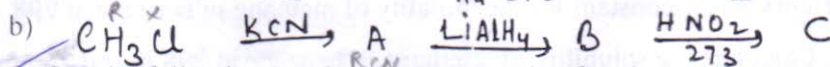
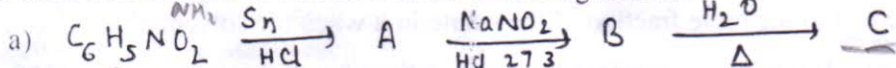
- Buna-N
- Bakelite
- Teflon

17. For a chemical reaction $\text{R} \longrightarrow \text{P}$ the variation in the concentration $\ln[\text{R}]$ vs time plot is given as



- Predict the order of the reaction.
- What is the slope of the curve.
- Write the unit of rate constant for this reaction.

18. Write the structure of A, B & C in the following reaction



19. Define the following by giving one example of each

- Antiseptics
- Antioxidants
- Narcotic Analgesics

20. Vapour pressure of water at $20^\circ C$ is 17.5 mmHg. Calculate the vapour pressure of water at $20^\circ C$ when 15g of glucose (molar mass = 180g/mol) is dissolved in 150g of water.

21. How do you convert the following

- Phenol to 2-hydroxyacetophenone
- Ethyl chloride to methoxyethane
- Acetone to 2-methylpropan-2-ol

22.

- Give a simple chemical test to distinguish between CH_3CH_2CHO & CH_3CHO
- Arrange the following in increasing order of their reactivity towards nucleophilic addition reaction $C_6H_5COCH_3$, CH_3CHO , CH_3COCH_3
- Write the structure of 2-hydroxybenzaldehyde.

23. Seeing the growing cases of diabetes & depression among young children Mr. Lugani the Principal of one of reputed school organized a seminar in which he invited Parents & Principal. They all resolved matter by strictly banning junk food and introduced health snacks & drinks like lassi, milk & soup in the school canteen. They also decided to make compulsory half an hour of daily physical activity and after six months tremendous improvement in the health of students occurred.

- What are the values displayed by Mr. Lugani?
- As a student how can you spread awareness about this issue?
- What are antidepressant drugs? Give an example.
- Name the sweetening agent used in preparation of sweets by diabetic patient.

$CH_3CONH_2 \xrightarrow{HNO_2} CH_3CO$

24. Illustrate the following reaction giving suitable example in each case.

- a) Hoffmann Bromamide degradation reaction
- b) Diazotization
- c) Gabriel phthalimide synthesis
- d) Antiferromagnetism
- e) N-type semiconductor

25. Derive an equation to express that relative lowering of vapour pressure for a solution is equal to the mole fraction of the solute in it when the solvent alone is volatile.

(b) Henry's law constant for the molality of methane in benzene at 298 K is 4.27×10^5 mmHg. Calculate the solubility of methane in benzene at 298 K and 760 mmHg.

26. A compound X (C_2H_4O) on oxidation gives Y ($C_2H_4O_2$), X undergoes haloform reaction. On treatment with HCN 'X' forms a product 'Z' which on hydrolysis gives 2 hydroxy propanoic acid.

- a) Write down structure of X & Y.
- b) Name the product when X reacts with dil NaOH.
- c) Write down equation for the reactions involved.