SIR. CV. RAMAN COACHING CENTRE – IDAPPADI, SALEM -2025

XII- CHEMISTRY SECOND VOLUME PUBLIC - MODEL QUESTION PAPER -2025

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SECTION – A (15 X 1 = 15 M)

Choose the correct best answer

1. Faraday constant is defined as
a) charge carried by 1 electron b) charge carried by one mole of electrons
c) charge required to deposit one mole of substance
d) charge carried by 6.22×10^{10} electrons.

2. During electrolysis of molten sodium chloride, the time required to produce 0.1mole of chlorine gas using a current of 3A is
a) 55 minutes b) 107.2 minutes c) 220 minutes d) 330 minutes

3. A certain current liberated 0.504gm of hydrogen in 2 hours. How many grams of copper can be liberated by the same current flowing for the same time through copper sulphate solution
a) 31.75 b) 15.8 c) 7.5 d) 63.5

4. Hair cream is
a) gel b) emulsion c) solid sol d) sol.

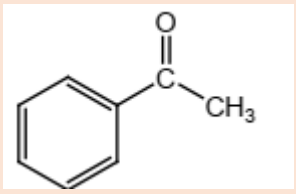
5. Collodion is a 4% solution of which one of the following compounds in alcohol –ether mixture?
a) Nitroglycerine b) Cellulose acetate c) Glycoldinitrate d) Nitrocellulose

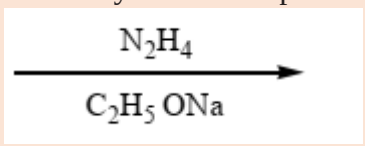
6. The most effective electrolyte for the coagulation of As_2S_3Sol is
a) NaCl b) $Ba(NO_3)_2$ c) $K_3[Fe(CN)_6]$ d) $Al_2(SO_4)_3$

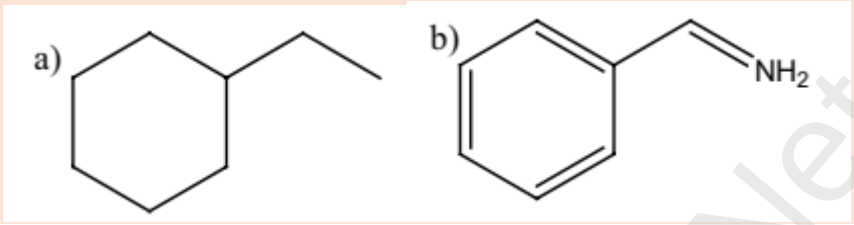
7. Isopropylbenzene on air oxidation in the presence of dilute acid gives
a) C_6H_5COOH b) $C_6H_5COCH_3$ c) $C_6H_5COC_6H_5$ d) C_6H_5 - OH

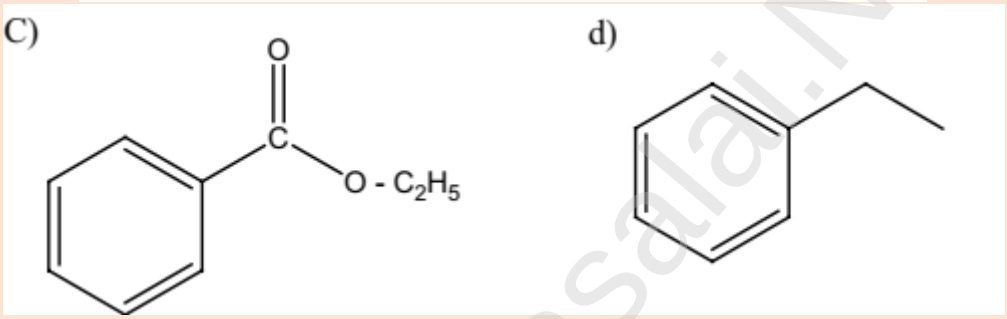
8. Among the following ethers which one will produce methyl alcohol on treatment with hot HI?
a) $(H_3C)_3C-O-CH_3$ b) $(CH_3)_2-CH-CH_2-O-CH_3$
c) $CH_3(CH_2)_3-O-CH_3$ d) $CH_3-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O-CH_3$

9.Identify the product formed in the reaction









10. Which one of the following nitro compounds does not react with nitrous acid

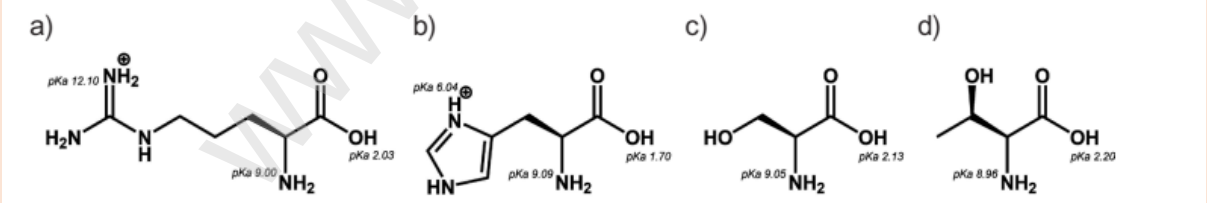
a) CH_3-CH_2-CH_2-NO_2 b) $(CH_3)_2CH$ - CH_2NO_2

c) $(CH_3)_3C\ NO_2$ d) $CH_3-C(=O)-CH(CH_3)-NO_2$

11. Secondary nitro alkanes react with nitrous acid to form

a) red solution b) blue solution c) green solution d) yellow solution

12. Among the following L-serine is



13. In aqueous solution of amino acids mostly exists in

a) NH_2-CH(R)-COOH b) NH_2-CH(R)-COO^-

c) H_3N^+-CH(R)-COOH d) H_3N^+-CH(R)-COO^-

14. Vitamin B2 is also known as

a) Riboflavin b) Thiamine c) Nicotinamide d) Pyridoxine

15.

Electrolyte	KCl	KNO_3	HCl	NaOAC	NaCl
Λ_m ($S\ cm^2\ mol^{-1}$)	149.9	145.0	426.2	91.0	126.5

Calculate Λ°_{HOAC} using appropriate molar conductances of the electrolytes listed above at infinite dilution in water at $25^{\circ}C$.

a) 517.2 b) 552.7 c) 390.7 d) 217.5

SECTION – B (6 X 2 = 12 M)

ANSWER ANY SIX QUESTION COMPULSORY Q.NO : 24

16. Define pH

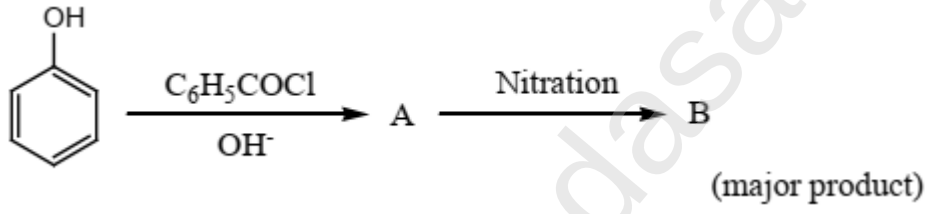
17. Write the expression for the solubility product of $Ca_3(PO_4)_2$

18. Define anode

19. Addition of Alum purifies water. Why?

20. Give three uses of emulsions.

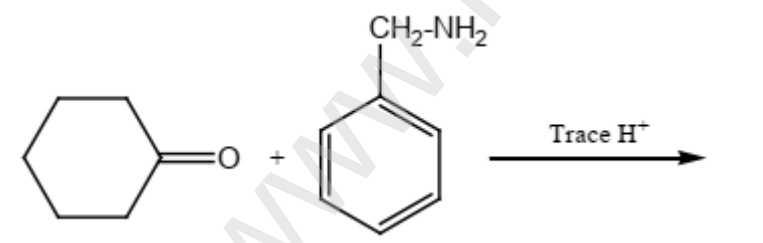
21. Complete the following reactions



22. What is the action of HCN on (i) propanone

23. How are vitamins classified

24. Complete the following reaction



SECTION – C (6 X 3= 18 M)

ANSWER ANY SIX QUESTION COMPULSORY Q.NO : 33

25Write a note on vulcanization of rubber

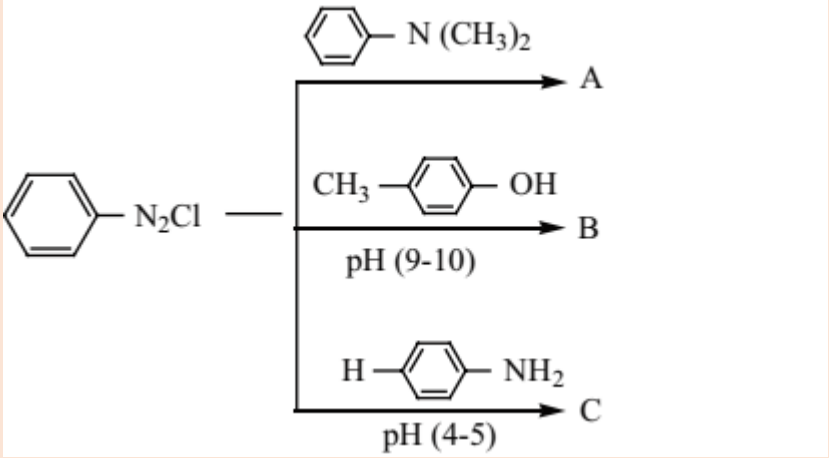
26.How the tranquilizers work in body

27. How will you prepare Lactic acid from ethanol

28. Write a note on electro osmosis

29. Why is AC current used instead of DC in measuring the electrolytic conductance?

30.



31. Can we use nucelophiles such as NH_3, CH_3O^- for the Nucleophilic substitution of alcohols

32. State Faraday's Laws of electrolysis

33. Indentify the conjugate acid base pair for the following reaction in aqueous solution

$$HPO_4^{2-} + SO_3^{2-} \rightleftharpoons PO_4^{3-} + HSO_3^-$$

SECTION – D (5 X 5 = 15 M)

ANSWER ALL QUESTIONS :

34) a) Derive an expression for Ostwald's dilution law

(or)

b) Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base

35.a) State Kohlrausch Law. How is it useful to determine the molar conductivity of weak electrolyte at infinite dilution.

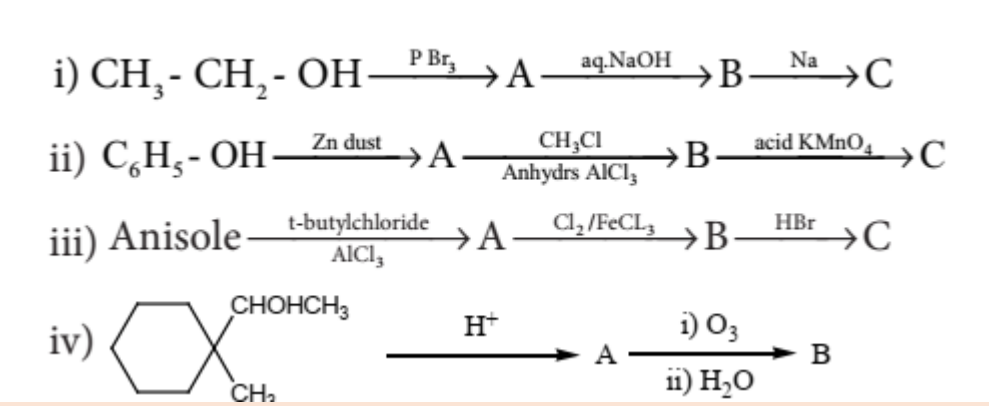
(or)

b) In fuel cell H_2 and O_2 react to produce electricity. In the process, H_2 gas is oxidised at the anode and O_2 gas is reduced at cathode. If 44.8 litre of H_2 at 25 ^{0}C and 1atm pressure reacts in 10 minutes, what is average current produced? If the entire current is used for electro deposition of Cu from Cu2+ , how many grams of deposited?

36.a) Describe adsorption theory of catalysis.

(or)

b) Complete the following reactions



37.a) An alkene (A) on ozonolysis gives propanone and aldehyde (B). When (B) is oxidised (C) is obtained. (C) is treated with Br2/P gives (D) which on hydrolysis gives (E). When propanone is treated with HCN followed by hydrolysis gives (E). Identify A, B, C, D and E.

(or)

b) A dibromo derivative (A) on treatment with KCN followed by acid hydrolysis and heating gives a monobasic acid (B) along with liberation of CO_2 . (B) on heating with liquid ammonia followed by treating with Br2/KOH gives (c) which on treating with $NaNO_2$ and HCl at low temperature followed by oxidation gives a monobasic acid (D) having molecular mass 74. Identify A to D.

38.a) (i) Write the Zwitter ion structure of alanine (ii) Give two difference between Hormones and vitamins

(or)

b) Explain the mechanism of cleansing action of soaps and detergents

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