

COMMON SECOND MID-TERM TEST – 2023

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Standard XII

Reg.No.:

CHEMISTRY

Time: 1.30 hrs.

THOOTHUKUDI
DISTRICT

Marks: 40

Part - I

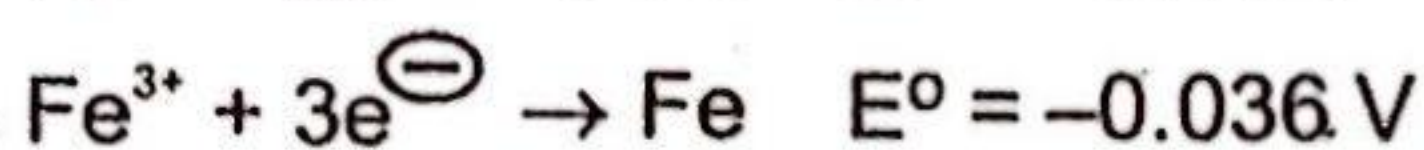
I. Choose the correct answer:

10 x 1 = 10

1. Faraday constant is defined as

- a) charge required to deposit one mole of substance
- b) charge carried by one electron
- c) charge carried by Avogadro number of electrons
- d) charge carried by 6.22×10^{10} electrons

2. Given standard electrode potential



The standard electrode potential for the reaction $\text{Fe}^{3+} + e^{-} \rightarrow \text{Fe}^{2+}$ is

- a) -0.476 V
- b) -0.404 V
- c) $+0.404 \text{ V}$
- d) $+0.771 \text{ V}$

3. As_2S_3 Sol is

- a) positive colloid
- b) negative colloid
- c) neutral colloid
- d) none

4. Absorption of a gas on solid metal surface is spontaneous and exothermic then

- a) ΔS decreases
- b) ΔG increases
- c) ΔH increases
- d) ΔS increases

5. The coagulating power of an electrolyte for As_2S_3 sol decreases in the order

- a) $\text{Na}^{+} > \text{Al}^{3+} > \text{Ba}^{2+}$
- b) $\text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^{-}$
- c) $\text{Al}^{3+} > \text{Ba}^{2+} > \text{Na}^{+}$
- d) $\text{Na}^{+} > \text{Mg}^{2+} > \text{PO}_4^{3-}$

6. A magnetic moment of 2.82 BM will be shown by one among the following

- a) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
- b) $[\text{Ni}(\text{CN})_4]^{2-}$
- c) TiCl_4
- d) $[\text{CoCl}_6]^{4-}$

7. A complex in which the oxidation number of the metal is zero is

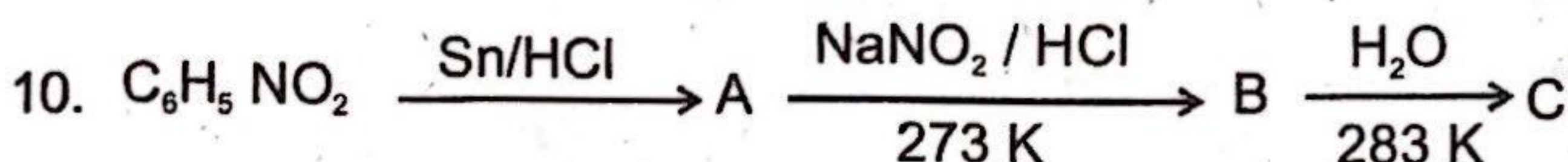
- a) $\text{K}_4[\text{Fe}(\text{CN})_6]$
- b) $[\text{Fe}(\text{CO})_5]$
- c) $[\text{Fe}(\text{CN})_3(\text{NH}_3)_3]$
- d) $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$

8. Which of the following is paramagnetic?

- a) $[\text{Fe}(\text{CN})_6]^{4-}$
- b) $[\text{Ni}(\text{CO})_4]$
- c) $[\text{Ni}(\text{CN})_4]^{2-}$
- d) $[\text{CoF}_6]^{3-}$

9. Which one of the following will not undergo Hoffman bromamide reaction?

- a) $\text{CH}_3\text{CO NHCH}_3$
- b) $\text{CH}_3\text{CO NH}_2$
- c) $\text{CH}_3\text{CH}_2\text{CO NH}_2$
- d) $\text{C}_6\text{H}_5\text{CO NH}_2$



'C' is

- a) $\text{C}_6\text{H}_5\text{OH}$
- b) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$
- c) $\text{C}_6\text{H}_5\text{CHO}$
- d) $\text{C}_6\text{H}_5\text{NH}_2$

Part - II

II. Answer any 4 questions. (Q.No.16 is compulsory)

4 x 2 = 8

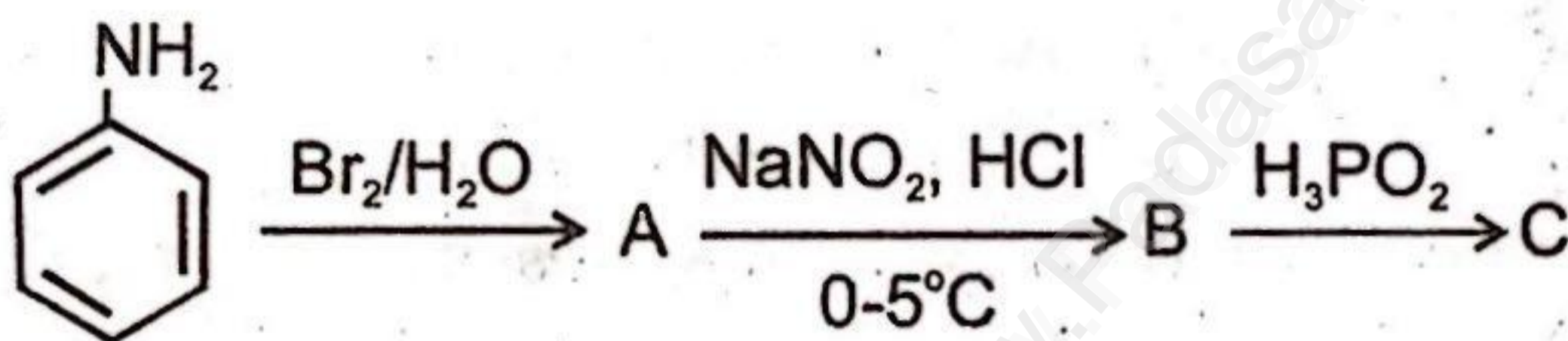
11. State Kohlrausch law.
12. Heat of adsorption is greater for chemisorption than physical adsorption. Why?
13. Arrange the following in the increasing order of boiling point.
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$, $\text{CH}_3\text{CH}(\text{OH})\text{CH}_3$, $(\text{CH}_3)_3\text{N}$, $\text{C}_2\text{H}_5\text{NHCH}_3$, $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
14. Aniline does not undergo Friedel Crafts reaction. Why?
15. What are the limitations of VB theory?
16. The Emf of a cell, corresponding to the reaction
 $\text{Zn}_{(s)} + 2\text{H}^+_{(aq)} \rightarrow \text{Zn}^{2+} (0.1 \text{ M}) + \text{H}_{2(g)} 1 \text{ atm}$ is 0.28 V at 25°C. Calculate pH of the solution at the hydrogen electrode. (Given $E^0_{\text{Zn}^{2+}/\text{Zn}} = -0.76 \text{ V}$)

Part - III

III. Answer any 4 questions. (Q.No.22 is compulsory)

4 x 3 = 12

17. State Faraday First and Second law.
18. Write any three characteristics of catalyst.
19. Write the postulates of Werner's theory.
20. Draw schematic diagram of splitting of 'd' orbital in octahedral field.
21. Write any two differences between primary, secondary and tertiary amines.
22. Identify A to C in the following.



Part - IV

IV. Answer all the questions.

2 x 5 = 10

23. a) Write the differences between physisorption and chemisorption. (5 m)

(OR)

- b) Write short note on the following :

- i) Gabriel phthalamide reaction
- ii) Carbylamine reaction
- iii) Diazotisation
- iv) Coupling reaction
- v) Sand Meyer reaction

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24. a) Derive Nernst equation. (5 m)

(OR)

- b) For the complex ion of $[\text{Co}(\text{NH}_3)_6]^{2+}$

- i) State the hybridisation and magnetic nature of the complex.
- ii) What is the oxidation number of cobalt in the complex.
- iii) Give IUPAC name of the complex.
