

COMMON SECOND MID-TERM TEST - 2019

KA

Standard XII

Reg No. :

--	--	--	--	--	--

Marks: 30

CHEMISTRY

Time: 1.30 hours.

Note: Draw diagrams and write equations wherever necessary:

Part - I

8 x 1 = 8

I. Choose the correct answer:

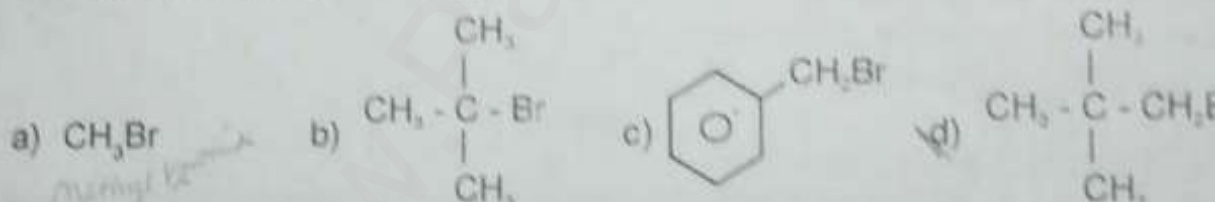
- $H_2PO_4^-$ the conjugate base of
 - PO_4^{3-}
 - P_2O_5
 - H_3PO_4
 - HPO_4^{2-}
- Ionic product of water at 298 K is
 - 1.14×10^{-18}
 - 2.95×10^{-18}
 - 1.00×10^{-14}
 - 2.71×10^{-14}
- Assertion : Pure iron when heated in dry air is converted with a layer of rust.
Reason : Rust has the composition Fe_3O_4
 - if both assertion and reason are true and reason is the correct explanation assertion
 - if both assertion and reason are true but reason is not the correct explanation assertion
 - assertion is true but reason is false
 - both assertion and reason are false
- Consider the following half cell reaction

$$Mn \rightarrow Mn^{2+} + 2e^- \quad E^\circ = 1.18 \text{ V}$$

$$Mn^{2+} \rightarrow Mn^{3+} + e^- \quad E^\circ = -1.51 \text{ V}$$
 The E° for the reaction $3Mn^{2+} \rightarrow Mn + 2Mn^{3+}$ and the possibility of the forward react are respectively.
 - 2.69 V and spontaneous
 - 2.69 V and non spontaneous
 - 0.33 V and spontaneous
 - 4.18 V and non spontaneous

5. In the reaction Ethanol $\xrightarrow{PCl_5}$ X $\xrightarrow{\text{alc. KOH}}$ Y $\xrightarrow[298 \text{ K}]{H_2SO_4 / H_2O}$ Z, the Z is

- ethane
 - ethoxy ethane
 - ethyl bisulphate
 - ethanol
6. Which one of the following alkyl halide can not be used to prepare ether by Williamson's synthesis?



7. Carboxylic acids have higher boiling points than aldehydes, ketones and alcohols of comparable molecular mass. It is due to their
- more extensive association of carboxylic acid via Vander Waals force of attraction
 - formation of carboxylate ion
 - formation of intra molecular H-bonding
 - formation of intermolecular H-bonding
8. Which one of the following is strong acid?
- CCl_3COOH
 - $H_2CClCOOH$
 - $HCCl_2COOH$
 - CH_3COOH

Part - II

II. Answer any 4 questions: (Ques.No.12 is compulsory)

4 x 1 = 4

- Define common ion effect.
- Calculate the pH of 0.04 M HNO_3 solution.

(2)

11. Why is AC current is used instead of DC in measuring electrolytic conductance?
 12. Is it possible to store copper sulphate in an iron vessel for a long time?

Given $E^{\circ}_{\text{Cu}^{2+}/\text{Cu}} = 0.34 \text{ V}$ and

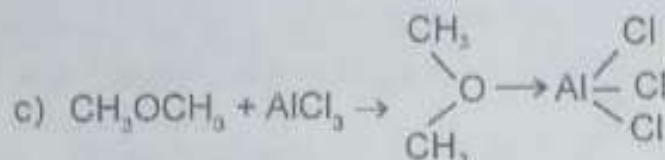
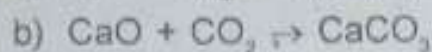
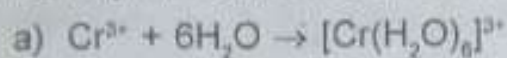
$$E^{\circ}_{\text{Fe}^{2+}/\text{Fe}} = -0.44 \text{ V}$$

13. How do you prepare phenol by Dows process?
 14. Write any two uses of formaldehyde.

Part - III**III. Answer any 3 questions: (Ques.No.18 is compulsory)**

3 x 3 = 9

15. Identify the Lewis acid and the Lewis base in the following reactions.



16. Derive an expression for Nernst equation.

17. Write short notes on saponification reaction.

18. What is the major product obtained when 2,3-dimethyl pentan-3-ol is heated in the presence of H_2SO_4 .

19. What is the preparation of Urotropine and write its structure.

Part - IV**IV. Answer all the questions:**

2 x 5 = 10

20. a) Derive Ostwald's dilution law. [3]

b) What is butter index. [2]

(or)

c) Explain Mercury button cell. [3]

d) A current strength of 3.86 A was passed through molten calcium oxide for 41 minutes and 40 seconds. Calculate the mass of calcium in grams deposited at the cathode is (atomic mass of Ca is 40 g/mole and 1 F = 96500 C) [2]

21. a) Alkene + Diborane $\xrightarrow{\text{H}_2\text{O}_2/\text{NaOH}}$ product.

Explain with example the product is an anti-Markownikoff's product? [3]

b) Define Coupling reaction. [2]

(or)

c) Write the Cannizaro reaction with mechanism? [3]

d) Write any tests for aldehydes? [2]
