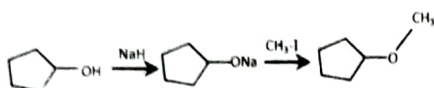


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- 10) Conjugate base for Bronsted acids H_2O and HF are
- a) OH^- and H_2FH^+ respectively b) H_3O^+ and F^- , respectively
- c) OH^- and F^- , respectively d) H_3O^+ and H_2F^+ , respectively
- 11) $(\text{CH}_3)_3\text{C}-\text{CH}(\text{OH})\text{CH}_3 \xrightarrow{\text{ConH}_2\text{SO}_4} \text{X}(\text{major product})$
- a) $(\text{CH}_3)_3\text{CCH}=\text{CH}_2$ b) $(\text{CH}_3)_2\text{C}=\text{C}(\text{CH}_3)_2$
- c) $\text{CH}_2=\text{C}(\text{CH}_3)\text{CH}_2-\text{CH}_2-\text{CH}_3$ d) $\text{CH}_2=\text{C}(\text{CH}_3)-\text{CH}_2-\text{CH}_2-\text{CH}_3$
- 12) Buffer solutions have constant acidity and alkalinity because
- a) They have large excess of H^+ or OH^- ions
- b) They have fixed value of pH
- c) These give unionized acid or base on reaction with added acid or alkali.
- 4) Acids and alkalies in these solutions are shielded from attack by other ions
- 13) The reaction



Can be classified as

- a) dehydration b) Williamson alcoholsynthesis
- c) Williamson ether synthesis d) dehydrogenation of alcohol
- 14) Predict the product Z in the following series of reactions



- a) $(\text{CH}_3)_2\text{C}(\text{OH})\text{C}_6\text{H}_5$ b) $\text{CH}_3\text{CH}(\text{OH})\text{C}_6\text{H}_5$
- c) $\text{CH}_3\text{CH}(\text{OH})\text{CH}_2-\text{CH}_3$ d) 

- 15) Acetaldehyde is the rearrangement product of
- a) Methyl alcohol b) Allyl alcohol
- c) Vinyl alcohol d) Ethyl alcohol

Part - II

6x2=12

Answer any six of the following. (24 is compulsory):

- 16) Explain Van arkel method
- 17) Explain the action of heat on Boric acid.
- 18) Write any three uses of silicones.
- 19) Classify the following solids
- a) P4 b) Brass c) diamond d) NaCl
- 20) Give any three examples for the first order reaction.
- 21) Define solubility product.
- 22) What happens when glycerol react with KHSO_4 ?
- 23) Write the preparation of urotropine and its uses.
- 24) K_b for NH_4OH is 1.8×10^{-5} . Calculate the percentage of ionisation of 0.06M. ammonium hydroxide solution.

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Part - III

6x3=18

Answer any six of the following. (30 is compulsory):

- 25) How will you prepare potash alum?
- 26) Calculate the number of unpaired electrons in Ti^{3+} , Mn^{2+} and calculate the spin only magnetic moment.
- 27) What are the effects of lanthanide contraction?
- 28) Derive the integrated rate law for Zero Order reaction. $A \rightarrow \text{product}$
- 29) Derive an expression for Ostwald's dilution law
- 30) Identify the order of the following reaction
 - a) Rusting of iron
 - b) Radioactive decay of ${}_{92}U^{238}$.
 - c) $2A + 3B \rightarrow \text{product}$, Rate = $k(A)^{1/2} (B)^2$.
- 31) Write three uses of diethyl ether
- 32) Write note on Benzoin Condensation
- 33) Identify the esters in the following fruits.
 - a) banana
 - b) pineapple
 - c) orange

Part - IV

5x5=25

Answer all of the following:

- 34) a) i) What is Roasting? (2)
 - ii) Explain Cyanide leaching (3)
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- (OR)
- b) i) Differentiate Diamond and graphite.
 - ii) What are interhalogen compounds? Explain types with examples.
- 35) a) Describe the preparation of $K_2Cr_2O_7$.
- (OR)
- b) i) Most of the transition metals and their compounds have catalytic activity. Why?
 - ii) What is Zeigler - Natta catalyst? Mention its uses.
- 36) a) i) Define Unit Cell (2)
 - ii) Calculate the packing efficiency of packing in case of face centered cubic crystal (3).
- (OR)
- b) i) Explain briefly the collision theory of bimolecular reactions. (3)
 - ii) What are elementary reactions (2)
- 37) a) i) Derive Henderson equation (3)
 - ii) Calculate the pH of 0.04 M HNO_3 solution. (2)
- (OR)
- b) i) Convert glycol into a) ethylene b) epoxide c) dioxan
- 38) a) i) From Phenol how will you prepare
 - a) picric acid
 - b) salicylic acid
 - c) azo dye
- (OR)
- b) Explain the mechanism of aldol condensation.
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