

## PART (B) : CHEMISTRY

**SOLUTION**

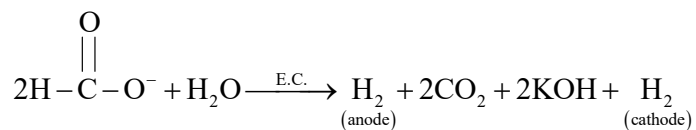
26. (D)

The given reaction is an example of Wurtz Reaction.

27. (C)

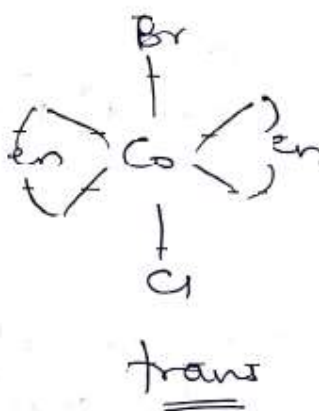
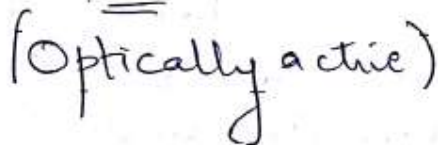
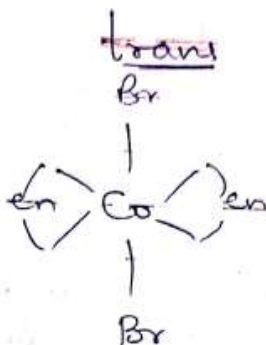
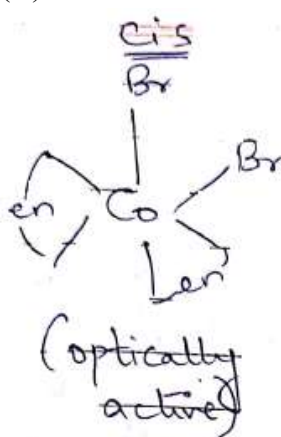
NaI is soluble in acetone but NaCl is insoluble and hence Finkelstein reaction is used to prepare alkyl iodides from chlorides and bromides.

28. (D)

It cannot be classified as a disproportionation reaction as potassium formate undergoes oxidation at anode and  $\text{H}^+$  ions from water are reduced at cathode.

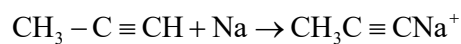
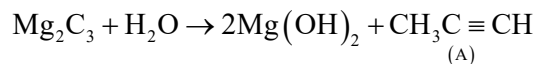
29. (A)

30. (D)



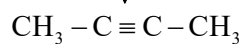
31. (A)

32. (B)



(A)

(B)



(C)

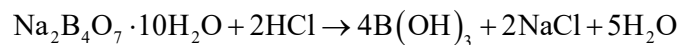
33. (D)

Among the alkaline metal hydroxides  $\text{Be}(\text{OH})_2$  is the least soluble in water.

34. (C)

The general formula for cyclic silicates is  $(\text{SiO}_3)_n^{2n-}$

35. (B)



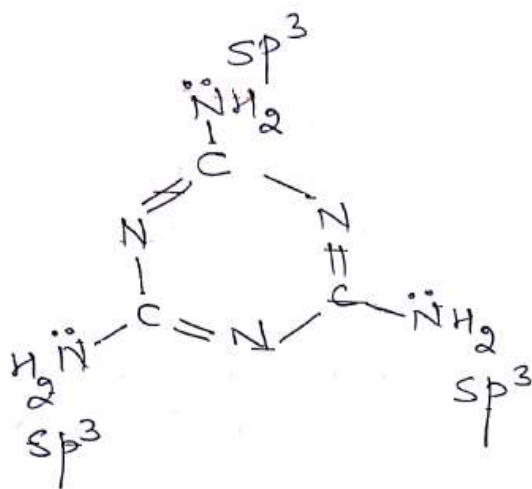
36. (D)

The addition of Baeyer's reagent is syn while that of  $\text{HCO}_3\text{H}$  is anti addition. Hence the cis alkene will give erythro isomers and the trans alkene would give the threo isomers.

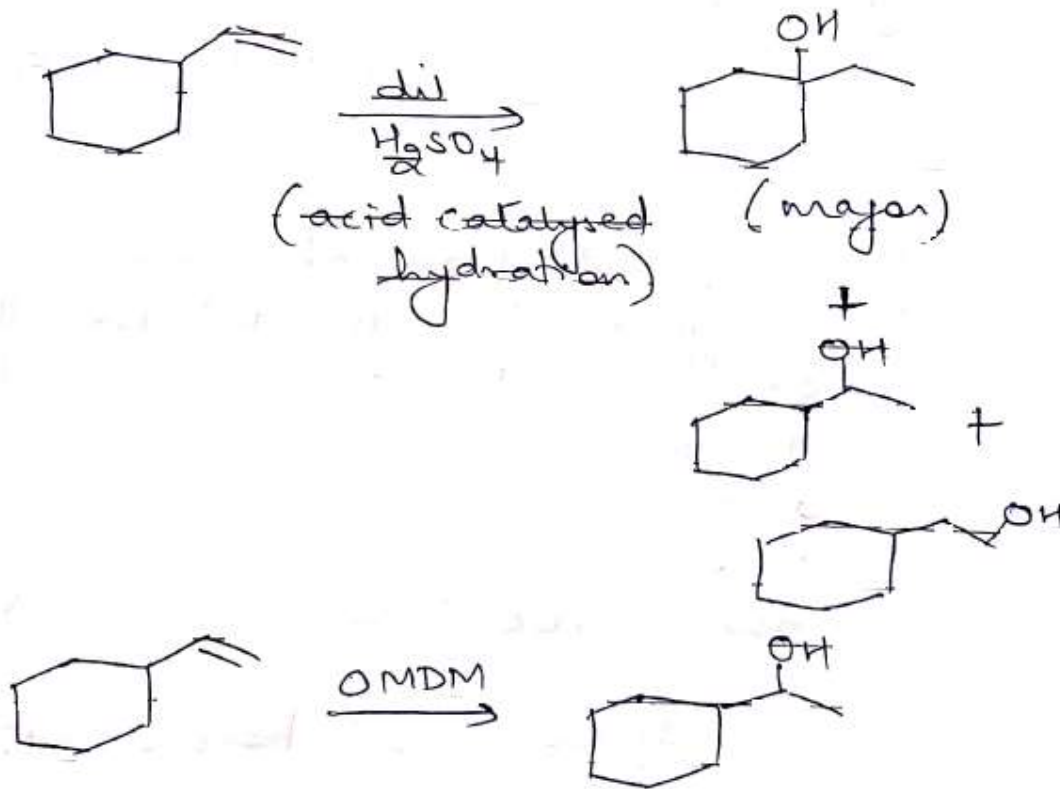
37. (C)

In  $\text{H}_3\text{BO}_3$  the boron atom uses an unhybridised p-orbital for back-bonding.

38. (B)



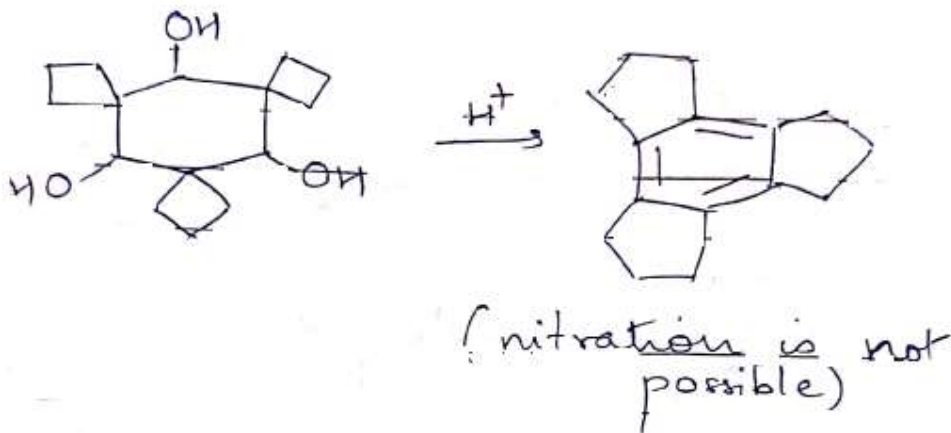
39. (D)



40. (D)

$\text{Ni}^0$  has  $d^{10}$  configuration.

41. (D)



42. (D)

If  $a$  is side of cube, then  $\Delta x = a\sqrt{3}$

$$\therefore \Delta x = 10\sqrt{3} \text{ cm} = 10\sqrt{3} \times 10^{-2} \text{ m}$$

$$\Delta x \cdot \Delta p = \frac{h}{4\pi}$$

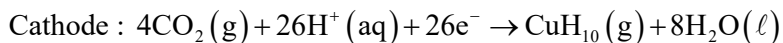
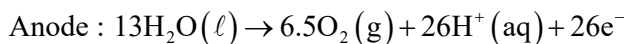
$$\Delta x.m.\Delta v = \frac{h}{4\pi}$$

$$\Delta v = \frac{6.63 \times 10^{-34}}{4 \times 3.14 \times 9.1 \times 10^{-31} \times 10\sqrt{3} \times 10^{-2}}$$

$$\Delta v = 3.34 \times 10^{-4} \text{ ms}^{-1}$$

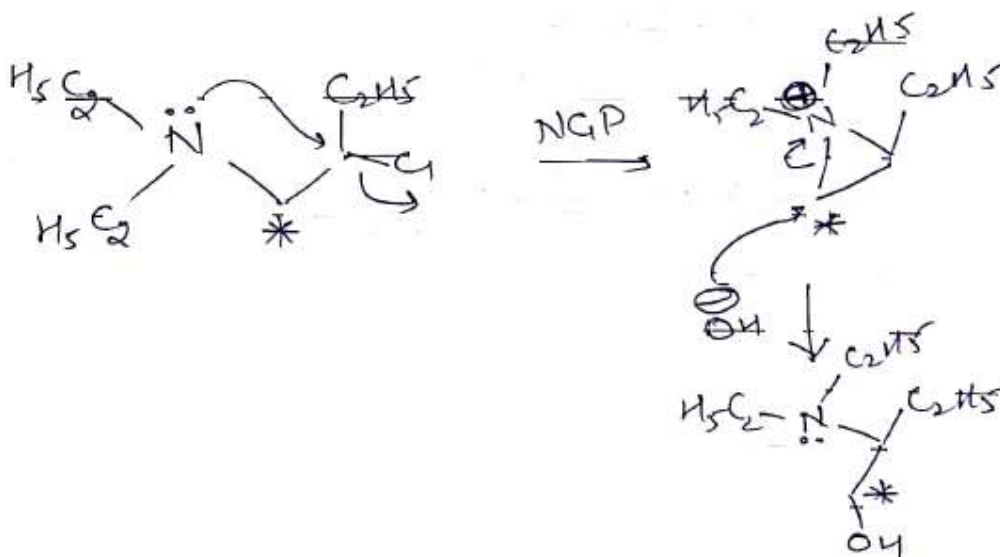
43. (A)

To find n we break the cell reaction into two half cell reactions.



$$E^\circ = \frac{-\Delta G^\circ}{nF} = \frac{(-2746) \times 1000}{26 \times 96500} = 1.09 \text{ V}$$

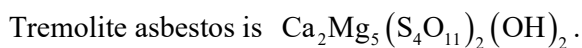
44. (D)



45. (C)

Formation of sodium hydrogen carbonate (Solvay's process)

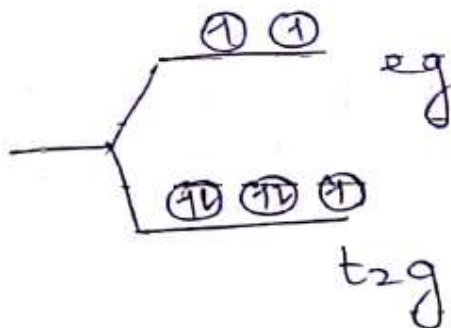
46. (5)



The silicate ion present is  $(\text{Si}_4\text{O}_{11})^{5-}$ .

47. (5)

In brown ring complex the oxidation number of Fe is +1. The ligand NO donates an electron into the d-orbital of Fe. The number of d-electrons in Fe are 7.



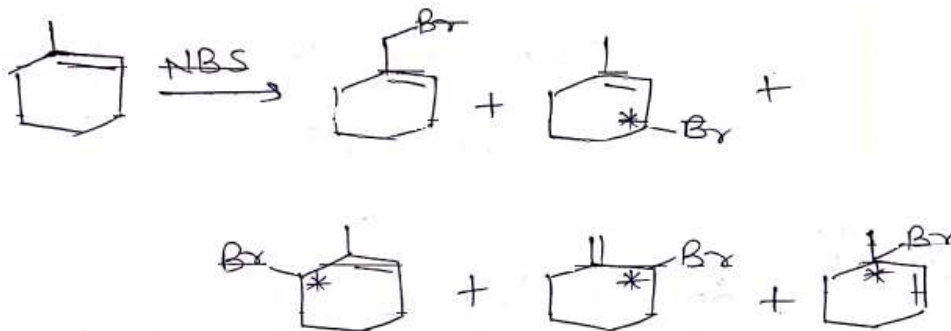
48. (6)

$$\eta = \frac{T_2 - T_1}{T_2} = \frac{500 - 350}{500} = \frac{|-W_{\text{total}}|}{10}$$

Work done in one cycle = 3 K cal

 $\therefore$  Work done in two cycles = 6 Kcal.

49. (9)



50. (7)

