

- theory.
- Q-3 c) Discuss the molecular energy level diagram for N_2 . (4)
Attempt all questions (14)
- a) Explain Born-Haber cycle with example. (7)
 b) Discuss Schottky defects, Frenkel defect and its consequences. (7)
- Q-4 **Attempt all questions** (14)
- a) Discuss Dow's process and Cumene process for the production of phenol. (5)
 b) Explain Kolbe-Schmitt reaction and its mechanism. (5)
 c) Discuss the reaction of ethers with conc. H_2SO_4 , HI, PCl_5 and acetyl chloride. (4)
- Q-5 **Attempt all questions** (14)
- a) Discuss Hinsberg test for the analysis of amines. (5)
 b) Discuss various methods of preparation of amines. (5)
 c) Give conversion of (4)
 i) 2,4,6-Tribromoaniline from benzene
 ii) P-Bromo aniline from aniline
- Q-6 **Attempt all questions** (14)
- a) Discuss Nernst equation & its applications. (5)
 b) Explain acid-base catalyst and the application of catalyst. (5)
 c) Discuss Promoters and anticatalyst with suitable example. (4)
- Q-7 **Attempt all questions** (14)
- a) Give method to determination of acidity and alkalinity. (5)
 b) Give method for calculating of hardness of water. (5)
 c) Calculate K_{sp} of $Fe(OH)_3$ whose solubility is 1.0×10^{-3} . (4)
- Q-8 **Attempt all questions** (14)
- a) Draw the resonating structure of p-cresol and m-nitrophenol. (5)
 b) Write a note on defects and conduction. (5)
 c) 200 ml of 1.3×10^{-3} M $AgNO_3$ is mixed with 100 ml 4.5×10^{-5} M Na_2S solution will precipitation occur? ($K_{sp} = 1.6 \times 10^{-49}$) (4)

