

**Code No: 151AF****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech I Year I Semester Examinations, June - 2022****CHEMISTRY****(Common to EEE, CSE, IT, CSIT, ITE, CE(SE), CSE(CS), CSE(DS), CSE(Networks), CSED)****Time: 3 Hours****Max. Marks: 75**

**Answer any five questions**  
**All questions carry equal marks**

---

- 1.a) Write molecular orbital structure and energy level diagram of  $N_2$ .  
b) Write crystal field splitting of transition metal ion in tetrahedral geometry. [8+7]
- 2.a) Describe band structure of solids.  
b) Discuss salient features of crystal field theory. [7+8]
- 3.a) Describe Calgon conditioning and Phosphate conditioning.  
b) Discuss potable water and its specifications. [7+8]
- 4.a) Discuss the applications of metallic coating.  
b) Discuss principle involved in the construction and applications of Glass electrode. [8+7]
- 5.a) Write the principle and applications of calomel electrode.  
b) Discuss factors affecting rate of corrosion. [7+8]
- 6.a) Write a note on Lead-acid storage battery.  
b) Write the mechanism of electrochemical corrosion. [7+8]
- 7.a) Discuss the mechanism of addition of HBr to propene under thermal and Photo chemical conditions.  
b) Explain structure, synthesis and pharmaceutical applications of Aspirin. [8+7]
- 8.a) Write a note on Grignard reaction with suitable examples.  
b) Explain the terms chemical shift and spin-spin coupling. [7+8]

--ooOoo--