

Code No: 152AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B.Tech I Year II Semester (Special) Examinations, January - 2021****CHEMISTRY****(Common to CE, ME, ECE, MCT)****Time: 2 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- 1.a) Draw molecular orbital energy level diagram for oxygen molecule. Calculate bond order and write its magnetic behaviour.
- b) Write salient features of crystal field theory. Explain crystal field splitting of transition metal 'd' orbitals in octahedral field. [7+8]
- 2.a) What are the causes and effects of hard water? What are the units in which hardness of water is Expressed? Name the methods for the removal of temporary and permanent hardness of water?
- b) Give an account on ion-exchange process. How exhausted resins are regenerated? [8+7]
- 3.a) Differentiate primary and secondary batteries. How do you construct Lithium primary battery?
- b) Explain about cathodic protection methods by sacrificial anodic and impressed cathodic protection methods. [7+8]
- 4.a) Discuss about conformational analysis of n- butane.
- b) How do you synthesise Paracetamol and give its pharmaceutical applications. [7+8]
- 5.a) Write the selection rules applicable to UV spectroscopy.
- b) How IR spectroscopy is used to identify the following functional groups
- OH, >CO, -CHO, -NH₂. [7+8]
- 6.a) Differentiate atomic and molecular orbitals. How does doping effects conduction in solids?
- b) Give an account on pi molecular orbitals of butadiene. [7+8]
- 7.a) Describe the steps involved in the treatment of potable water.
- b) Derive Nernst equation for electrode potential. [8+7]
- 8.a) Differentiate enantiomers and diastereomers with suitable examples.
- b) What are S_N1 and S_N2 reactions? Give one example for each type. Describe Walden inversion. [7+8]

---ooOoo---