

Code No: 152AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year II Semester Examinations, May - 2019

CHEMISTRY

(Common to EEE, CSE, IT)

Time: 3 hours

Max. Marks: 75

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART- A****(25 Marks)**

- 1.a) Describe molecular orbital energy level diagram of  $F_2$ . [2]
- b) Explain specifications in portable water. [2]
- c) Define standard electrode potential. [2]
- d) Explain the term chirality. [2]
- e) Define chemical shift. [2]
- f) Discuss band structure of solids. [3]
- g) Describe colloidal conditioning. [3]
- h) Write a note on cathodic protection. [3]
- i) Write the structure and pharmacological applications of Aspirin. [3]
- j) Describe the principle of vibrational and rotational spectroscopy. [3]

**PART-B****(50 Marks)**

- 2.a) Describe the hybridization of  $\pi$  molecular orbitals in benzene.
- b) Discuss salient features of crystal field theory.
- c) Write crystal field splitting of d-orbitals in octahedral geometry. [10]

**OR**

- 3.a) Write molecular orbital energy level diagram of  $O_2$ .
- b) Write a note on effect of doping on conduction.
- c) Discuss crystal field splitting of d-orbitals in tetrahedral geometry. [10]

- 4.a) Discuss disinfection of water by ozonisation.
- b) What are different factors causing hardness to water?
- c) Write a note on ion exchange process. [10]

**OR**

- 5.a) Write a note of reverse osmosis.
- b) Explain disinfection of water by chlorination.
- c) Describe Calgon conditioning. [10]

- 6.a) Describe the construction and working of quinhydrone electrode.
- b) Discuss galvanic corrosion.
- c) Write a note on surface coatings. [10]

**OR**

- 7.a) Describe different types of corrosion.
- b) Discuss electrolytic plating of nickel.
- c) Write Nernst equation. [10]

- 8.a) Write conformational structures of n-butane.  
b) Explain saytzeff rule.  
c) Write a note on hydroboration of olefins. [10]
- OR**
- 9.a) Write the mechanism of SN<sup>1</sup> reaction.  
b) Discuss the mechanism of reduction of carbonyl compounds with NaBH<sub>4</sub>.  
c) Write the product when HBr is added to propene under thermal conditions. [10]
- 10.a) Discuss the applications of electronic spectroscopy.  
b) Write the principle of NMR spectroscopy. [5+5]
- OR**
- 11.a) Discuss magnetic resonance imaging.  
b) Write the energy diagram of carbonyl compounds in electronic spectroscopy. [5+5]

---ooOoo---

*downloaded from*  
**StudentSuvidha.com**