

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 π 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^1 reaction.
b) Discuss the mechanism of reduction of carbonyl compounds with $NaBH_4$.
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]

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