R18

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 saytzef 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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