R18

Code No: 151AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech I Year I Semester Examinations, January/February - 2024
CHEMISTRY
(Common to EEE, CSE, IT, CSIT, ITE, CE(SE), CSE(CS), CSE(DS), CSE(N))

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 arks)

1.a)	Distinguish between atomic and molecular orbitals.	[2]
b)	On the basis of molecular orbital theory, explain why F_2 is diamagnetic while O_2 is paramagnetic.	[3]
c)	How do we regenerate the resins in ion exchange method?	[2]
d)	Explain Reverse Osmosis method for desalination of brackish water.	[3]
e)	What are the differences between primary and secondary Batteries give example.	[2]
f)	Discuss electroless plating of Nickel.	[3]
g)	Define enantiomer give example.	[2]
h)	Discuss the synthesis and applications of Aspirin.	[3]
i)	Give few applications of IR Spectra.	[2]
j)	What are the selection rules for vibrational spectroscopy?	[3]

PART – B

(50 Marks)

2. Discuss crystal field splitting of transition metal ion for d-orbital splitting in square planar Complexes with a suitable example. [10]

OR

3. Explain in detail the concept of LCAO. Draw the molecular orbital energy diagram of O_2 molecule and calculate its bond order. [10]

4. Give specifications of potable water and discuss the steps involved in treatment of municipal water. [10]

OR

5. Discuss the principle and procedure involved in estimation of hardness of water by EDTA method. [10]

6. Explain the charging and discharging process involved in Lead acid storage battery with equations. [10]

OR

7. Describe the galvanising and tinning process to explain the protection of iron metal using a neat diagram. [10]

8. Discuss the different possible conformational isomer of n-butane and discuss the isomer having maximum stability and maximum energy. [10]

OR

9. Discuss SN^1 and SN^2 mechanism with suitable examples and explain the stereo chemistry of both. [10]

10.a) Explain chemical shift. Discuss the factors affecting the chemical shift.

b) Discuss magnetic resonance imaging. [6+4]

OR

11. What are the selection rules for electronic transition in U V spectroscopy and discuss the different types of electronic transitions that occur in organic molecules on absorption of U V spectra. [10]

--ooOoo--