Q.P. Code: 18HS0801 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations May 2019

CHEMISTRY

(Common to CE,EEE,AGE,& MECH)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Write the significance of Ψ in Schrodinger wave equation.	2M
	b	Define internal energy.	2M
	c	What is reverse osmosis? Give any one application.	2M
	d	Write the chemical structures for starting materials of Nylon 6,6.	2M
	e	What are the differences between atomic and Molecular spectroscopy.	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	Predict the molecular geometries of following molecules (i) CH_4 (ii) NH_3 (iii) SF_6 (iv) H_2O	4M
	b	Justify the aromaticity in thiophene and cyloheptatrienyl cation.	6M
		OR	
3	**a**	Illustrate crystal field splitting of energy levels in Tetrahedral complex.	4M
	b	What are Slaters rules? Mention their role in calculation of effective nuclear charge.	6M

UNIT-II

4	**a**	Derive Gibbs free energy.	5M
	b	Write a note on Entrophy.	5M
		OR	
5	**a**	Explain the detailed mechanism of electrochemical corrosion.	8M
	b	What is meant by corrosion inhibitors? Give examples.	2M

UNIT-III

6		What are ion-exchange resins? Discuss their application in water-softening. How are spent resins regenerated?	10M
		OR	
7	**a**	What is meant by break point chlorination? Give its significance.	6M
	b	Explain sludge and Scale formation in boilers.	4M

UNIT-IV

8		What is substitution reaction? Explain different types of substitution reactions with examples.	10M
		OR	
9	**a**	Explain injection moulding with a neat diagram.	5M
	b	Bring out the differences between thermoplastics and thermosetting plastics.	5M

UNIT-V

10	**a**	State selection rule for IR spectra. Describe various molecular vibrations in the technique.	6M
	b	Mention any four applications of IR spectroscopy.	4M
		OR	
11		Discuss the working principle, instrumentation and applications of scanning electron microscopy(SEM).	10M

END