Code No: R19BS1106 **R19** SET - 1

I B. Tech I Semester Regular Examinations, January - 2020
APPLIED CHEMISTRY
(Com. to EEE, ECE, CSE, EIE, IT)

Time: 3 hours Max. Marks: 75

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

1.	a)	Discuss the properties of polymers.	(8M)
	b)	Discuss the preparation, properties and applications of polyurethanes.	(7M)
		Or	
2.	a)	Describe the characteristics of biopolymers and their role in medicine.	(8M)
	b)	Explain compounding of plastics.	(7M)
3.	a)	Explain (i) single electrode potential (ii) calomel cell	(8M)
	b)	Explain how proper design prevent rate of corrosion.	(7M)
		Or	
4.	a)	Discuss the working of dry cell, its advantages and limitations.	(8M)
	b)	Explain wet corrosion theory.	(7M)
5.	a)	Explain the characterization methods for nanomaterials.	(8M)
	b)	Discuss Czochralski crystal pulling and zone refining for preparation of pure semiconductors.	(7M)
		Or	
6.	a)	Discuss the applications of graphene and fullerene.	(8M)
	b)	Explain about (i) junction transistor (ii) diffusion method of semiconductor	(7M)
7.	a)	Explain molecular elevators.	(8M)
	b)	Discuss about characteristics and types of prototypes.	(7M)
		Or	
8.	a)	Discuss about natural and artificial molecular motors and machines.	(8M)
	b)	Write notes on the energy supply, a characteristic of artificial molecular motor.	(7M)
9.	a)	Discuss the working of geothermal energy.	(8M)
	b)	Explain the instrumentation of UV spectroscopy.	(7M)
		Or	
10.	a)	List the advantages and disadvantages of OTEC.	(8M)
	b)	Discuss about Frank-condon principle.	(7M)

Code No: R19BS1106 **R19** SET - 2

I B. Tech I Semester Regular Examinations, January - 2020

APPLIED CHEMISTRY

(Com. to EEE, ECE, CSE, EIE, IT)

Time: 3 hours Max. Marks: 75

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

1.	a)	Discuss the preparation, properties and applications of PVC.	(8M)
	b)	Give a brief account on fiber reinforced plastics.	(7M)
		Or	
2.	a)	Discuss the effect of structure of polymers on their physical properties.	(8M)
	b)	Discuss the plastic materials used in electronic gadgets and how they can be recycled.	(7M)
3.	a)	Explain electrochemical series and their uses.	(8M)
	b)	Explain differential aeration corrosion.	(7M)
		Or	
4.	a)	Describe the construction of Li ion battery. Write the cell reaction and mention its applications.	(8M)
	b)	Explain the constituents and functions of paints.	(7M)
5.	a)	Explain Hall effect and its applications.	(8M)
	b)	What are superconductors? Explain type I and type II superconductors.	(7M)
		Or	
6.	a)	Explain chalcogen photoconductors.	(8M)
	b)	Explain the applications of CNTs.	(7M)
7.	a)	Discuss autonomous light powered molecular motor.	(8M)
	b)	Write about acid-base controlled molecular shuttles.	(7M)
		Or	
8.	a)	Explain ab initio studies.	(8M)
	b)	Write notes on rotaxanes and catinanes.	(7M)
9.	a)	Explain the instrumentation of IR.	(8M)
	b)	Discuss the working of photovoltaic cell.	(7M)
		Or	
10.	a)	Discuss the applications of UV spectrometry.	(8M)
	b)	Discuss the working of hydropower.	(7M)

Code No: R19BS1106 **R19** SET - 3

I B. Tech I Semester Regular Examinations, January - 2020
APPLIED CHEMISTRY
(Com. to EEE, ECE, CSE, EIE, IT)

Time: 3 hours Max. Marks: 75

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

1.	a)	Explain biodegradable polymers and their applications.	(8M)
	b)	Explain injection and compression moulding technique of plastics.	(7M)
		Or	
2.	a)	Discuss the preparation and uses of bakelite.	(8M)
	b)	Write about p-type conducting polymers.	(7M)
3.	a)	Discuss concentration cell.	(8M)
	b)	Differentiate anodic and cathodic coatings.	(7M)
		Or	
4.	a)	Explain molten carbonate fuel cell.	(8M)
	b)	Explain the environmental factors affecting corrosion.	(7M)
5.	a)	Explain sol-gel method for preparation of nanomaterials.	(8M)
	b)	Explain p-n junction diodes as rectifiers.	(7M)
		Or	
6.	a)	Explain the applications of liquid crystals.	(8M)
	b)	Explain distillation and epitaxy for preparation of pure and doped semiconductors.	(7M)
7.	a)	Explain acid base controlled molecular shuttle.	(8M)
	b)	Write about Linear motions in Rotaxanes.	(7M)
		Or	
8.	a)	Explain the importance of computational chemistry.	(8M)
	b)	Discuss rotaxanes and catenanes as artificial molecular machines.	(7M)
9.	a)	Explain the intensity shifts of UV spectrophotometry.	(8M)
	b)	Discuss the working of OTEC.	(7M)
		Or	
10.	a)	Explain the procedure and application of CT scan.	(8M)
	b)	Explain the applications and limitations of photovoltaic cell.	(7M)

Code No: R19BS1106 **R19** SET - 4

I B. Tech I Semester Regular Examinations, January - 2020
APPLIED CHEMISTRY
(Com. to EEE, ECE, CSE, EIE, IT)

Time: 3 hours Max. Marks: 75

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

1.	a)	Discuss the preparation, properties and applications of Thiokol.	(8M)
	b)	Explain the role of proteins and lipids in biopolymers	(7M)
		Or	
2.	a)	Discuss (i) emulsion polymerization (ii) physical properties of polymers	(8M)
	b)	Explain the drawbacks of natural rubber and how can it be improved.	(7M)
3.	a)	Discuss (i) Ni-metal hydride (ii) phosphoric acid fuel cell	(8M)
	b)	Discuss cathodic protection.	(7M)
		Or	
4.	a)	Discuss the construction of zinc air cells and mention the cell reaction and its applications.	(8M)
	b)	Explain (i) passivity (ii) stress corrosion.	(7M)
5.	a)	Give a brief account on liquid crystals.	(8M)
	b)	Explain the characteristics of electrical insulators and give examples.	(7M)
		Or	
6.	a)	Explain the applications of superconductors.	(8M)
	b)	Discuss stoichiometric and controlled valency semiconductors.	(7M)
7.	a)	Define rotaxanes and catenanes. Explain linear motions in rotaxanes.	(8M)
	b)	Write about an autonomous light powered molecular motor.	(7M)
		Or	
8.	a)	Explain the characteristics of molecular motors and machines.	(8M)
	b)	Explain the drawbacks of albinitio studies.	(7M)
9.	a)	Explain the procedure and application of magnetic resonance imaging.	(8M)
	b)	Discuss the disadvantages of hydropower and geothermal power.	(7M)
		Or	
10.	a)	Explain the laws of absorption.	(8M)
	b)	Discuss the working of tidal and wave power.	(7M)