Code No: **R201215** **R20** **SET - 1**

I B. Tech II Semester Regular/Supplementary Examinations, July/August-2023
APPLIED CHEMISTRY

(Common to CSE, CSE-CS&T, IT, CSE-CS, CSE-IOT & CS Incl BCT, CSE-CS&BS, CSE-IOT, Cyber Security)

Time: 3 hours Max. Marks: 70

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

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UNIT -I

1. a) Write a note on polymerization methods. [7M]
   b) Give an account on the preparation, properties and applications of Bakelite. [7M]

(OR)

2. a) Discuss the preparation, properties and applications of BUNA S. [7M]
   b) Provide a discussion on conducting polymers. [7M]

UNIT-II

3. a) Write a note on CH_3OH-O_2 fuel cells. [7M]
   b) Discuss standard hydrogen electrode. [7M]

(OR)

4. a) Explain the theories of corrosion. [7M]
   b) Give a note on the contents and functions of special paints. [7M]

UNIT-III

5. a) Discuss about Type-I and Type –II superconductors. [7M]
   b) Provide a note on transmission electron microscopy. [7M]

(OR)

6. a) Explain in detailed the zone refining and Czochralski crystal pulling. [7M]
   b) What are the different types of liquid crystals? Explain the applications of liquid crystals. [7M]

UNIT-IV

7. a) Discuss the instrumentation in FT-IR spectroscopy. [7M]
   b) Explain chromophores and auxochromes with suitable examples. [7M]

(OR)

8. a) What is photovoltaic cell? Explain its working principle and schematic diagram [7M]
   b) Discuss hydropower and geothermal power. [7M]

UNIT-V

9. a) Give an account on molecular docking studies. [7M]
   b) Discuss about artificial molecular machines. [7M]

(OR)

10. a) Provide a note on computational chemistry with examples. [7M]
    b) Write about molecular elevators. [7M]

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Code No: **R201215** **R20** **SET - 2**

I B. Tech II Semester Regular Supplementary Examinations, July/August-2023
APPLIED CHEMISTRY

(Common to CSE, CSE-CS&T, IT, CSE-CS, CSE-IOT & CS Incl BCT, CSE-CS&BS, CSE-IOT, Cyber Security)

Time: 3 hours Max. Marks: 70

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

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UNIT -I

1.	a)	Discuss the mechanical properties of polymers.	[7M]
	b)	Give a note on biodegradable polymers.	[7M]

(OR)

2.	a)	Explain the recycling of e-plastic waste.	[7M]
	b)	Describe the preparation, properties and applications of PVC.	[7M]

UNIT-II

3.	a)	Write a note on lithium ion batteries.	[7M]
	b)	Provide a note on the factors influencing the rate of corrosion.	[7M]

(OR)

4.	a)	Discuss electrochemical series and its applications.	[7M]
	b)	Explain surface and cathodic coatings.	[7M]

UNIT-III

5.	a)	Write a note on the types of super conductors and their applications.	[7M]
	b)	Discuss how the Brunauer Emmet Teller (BET) method is useful in characterizing Nanomaterials.	[7M]

(OR)

6.	a)	Give an account on ferro and ferri magnetism.	[7M]
	b)	Provide a brief note on semiconductor devices.	[7M]

UNIT-IV

7.	a)	Discuss the instrumentation of UV-visible spectrophotometry.	[7M]
	b)	Describe the procedure and applications of CT scan.	[7M]

(OR)

8.	a)	Write the schematic diagram, advantages and disadvantages of photovoltaic cell.	[7M]
	b)	Discuss geothermal power and ocean thermal energy conversion.	[7M]

UNIT-V

9.	a)	What is computational chemistry? Provide some of its applications.	[7M]
	b)	Explain the applications of Rotaxanes and Catenanes as artificial molecular machines.	[7M]

(OR)

10.	a)	Discuss the characteristics of molecular motors and machines.	[7M]
	b)	Provide a note on acid-base controlled molecular shuttle.	[7M]

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Code No: **R201215** **R20** **SET - 3**

I B. Tech II Semester Regular/Supplementary Examinations, July/August-2023
APPLIED CHEMISTRY

(Common to CSE, CSE-CS&T, IT, CSE-CS, CSE-IOT & CS Incl BCT, CSE-CS&BS, CSE-IOT, Cyber Security)

Time: 3 hours Max. Marks: 70

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

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UNIT -I

1. a) How the polycarbonate polymers can be synthesized? Explain their properties. [7M]
   b) Give some examples of plastic materials used in electronic gadgets. [7M]

(OR)

2. a) Discuss the biomedical applications of polymers. [7M]
   b) Discuss emulsion and suspension methods of polymerization. [7M]

UNIT-II

3. a) Provide a note on zinc air cells batteries. [7M]
   b) Give a note on molten carbonate fuel cells. [7M]

(OR)

4. a) Discuss galvanic and differential corrosions. [7M]
   b) Explain electroplating and electroless plating. [7M]

UNIT-III

5. a) Discuss controlled valency and chalcogen photo/semiconductors. [7M]
   b) What is Hall effect? Discuss its applications. [7M]

(OR)

6. a) Give a note on the types, preparation methods and applications of carbon nanotubes. [7M]
   b) What are liquid crystals? Discuss the applications of liquid crystals. [7M]

UNIT-IV

7. a) What is electromagnetic spectrum? Discuss its various regions and their uses. [7M]
   b) Write the application of FT-IR in analyzing alcohols, carbonyls and amines. [7M]

(OR)

8. a) Discuss the disadvantages of photovoltaic cell and provide a note on ocean thermal energy conversion. [7M]
   b) Provide a note on hydropower. [7M]

UNIT-V

9. a) Explain linear motions in rotaxanes. [7M]
   b) Write a note on molecular modeling. [7M]

(OR)

10. a) Describe molecular elevator and autonomous light-powered molecular motor. [7M]
    b) How the molecular shuttles will takes place by changing pH? Discuss. [7M]

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Code No: **R201215** **R20** **SET - 4**

I B. Tech II Semester Regular/Supplementary Examinations, July/August-2023
APPLIED CHEMISTRY

(Common to CSE, CSE-CS&T, IT, CSE-CS, CSE-IOT & CS Incl BCT, CSE-CS&BS, CSE-IOT, Cyber Security)

Time: 3 hours Max. Marks: 70

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

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UNIT -I

1. a) Give an account on fiber reinforced plastics. [7M]
   b) Discuss any method of fabrication of plastics. [7M]

(OR)

2. a) Discuss the preparation, properties and applications of Bakelite. [7M]
   b) Give a note on biodegradable polymers. [7M]

UNIT-II

3. a) Explain cathodic coatings and anodic coatings. [7M]
   b) Describe the galvanic and electrochemical series? [7M]

(OR)

4. a) Discuss the H_2-O_2 fuel cells. [7M]
   b) Provide an account on calomel electrode. [7M]

UNIT-III

5. a) Elucidate how the sol-gel method is useful in making Nano materials. [7M]
   b) Explain the types and applications of super conductors. [7M]

(OR)

6. a) Write a note on electrical insulators. [7M]
   b) Elucidate how the zone refining and ion implantation are useful in making semiconductors. [7M]

UNIT-IV

7. a) Discuss the instrumentation of FT-IR spectroscopy. [7M]
   b) Explain the procedure and applications of magnetic resonance imaging. [7M]

(OR)

8. a) Provide a note on working principle and schematic diagram of photovoltaic cell. [7M]
   b) Give an account on tidal and wave power. [7M]

UNIT-V

9. a) Give a brief note on prototypes. [7M]
   b) Provide a detailed discussion on molecular docking studies. [7M]

(OR)

10. a) Discuss the use of Rotaxanes and Catenanes as artificial molecular machines. [7M]
    b) Write about molecular motors and machines. [7M]

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