Code No: **R201202** **R20** **SET - 1**

I B. Tech II Semester Regular/Supplementary Examinations, July/August-2023
ENGINEERING CHEMISTRY
(Common to CE, ME, Agri E)

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) Explain the preparation, Properties and applications of Buna-S. [7M]
   b) Write about conducting polymers. [7M]

(OR)

2. a) Summarize compounding of Plastics. [7M]
   b) Explain the methods of polymerization. [7M]

UNIT-II

3. a) Describe the construction and working of Lithium batteries. [7M]
   b) Explain the factors that are influencing the corrosion. [7M]

(OR)

4. a) What is electroplating? Explain. [7M]
   b) Describe the theories of Corrosion. [7M]

UNIT-III

5. a) Explain characterization of Nano materials by (transmission electron microscopy [TEM]) with example (TiO_2). [7M]
   b) Explain the types of carbon Nano tubes. [7M]

(OR)

6. a) Define lubricants and explain their importance. [7M]
   b) Write a note on constituents of Portland cement and their functioning. [7M]

UNIT-IV

7. a) Explain proximate and ultimate analysis of coal. [7M]
   b) Summarize petrol knocking. [7M]

(OR)

8. a) Write about anti-knocking agents. [7M]
   b) Describe Flue gas analysis by Orsat apparatus. [7M]

UNIT-V

9. a) Explain internal treatment of boiler water. [7M]
   b) How is hardness water determined? [7M]

(OR)

10 a) Explain desalination of brackish water by electro dialysis. [7M]
   b) Write about caustic embrittlement. [7M]

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Code No: **R201202** **R20** **SET - 2**

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

(Common to CE, ME, Agri E)

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) Illustrate the applications of composite materials. [7M]
   b) Write the mechanical properties of polymers. [7M]

(OR)

2. a) Write a note on Thiokol. [7M]
   b) Give some examples of plastic materials used in electronic gadgets. [7M]

UNIT-II

3. a) Explain the working of Hydrogen and Oxygen fuel cells. [7M]
   b) Explain different types of corrosion. [7M]

(OR)

4. a) Describe the construction and Working of Dry cell and write its applications. [7M]
   b) Write about protecting coatings. [7M]

UNIT-III

5. a) Illustrate Instrumentation and applications of differential thermal analysis (DTA). [7M]
   b) Give the definition and classification of Refractories. [7M]

(OR)

6. a) Explain the mechanism involved in Lubricants. [7M]
   b) Give the applications of Graphene and Fullerenes. [7M]

UNIT-IV

7. a) Write a note on Refining-Cracking. [7M]
   b) Describe Calorific Values. [7M]

(OR)

8. a) Explain about Rocket fuels. [7M]
   b) Write a note on Natural gas. [7M]

UNIT-V

9. a) Write about the hardness of water. [7M]
   b) Explain the Ion exchange process. [7M]

(OR)

10 a) Explain Boiler corrosion and priming problems in boiler troubles. [7M]
   b) Explain desalination of water by Reverse osmosis. [7M]

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Code No: **R201202** **R20** **SET -3**

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

(Common to CE, ME, Agri E)

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) Explain preparation and properties of Polycarbonates. [7M]
   b) Write a note on recycling of e-plastic waste. [7M]

(OR)

2. a) Give the preparation and applications of polyurethanes. [7M]
   b) Discuss about the Fiber reinforced plastics. [7M]

UNIT-II

3. a) Explain about zinc air cells in batteries. [7M]
   b) Write a note on Electroless plating. [7M]

(OR)

4. a) Summarize about Paints [7M]
   b) Explain about surface preparation methods in Protective coatings. [7M]

UNIT-III

5. a) Explain deterioration of cement. [7M]
   b) Write a note on Nanomaterials characterization by (Brunauer Emmett Teller BET]. [7M]

(OR)

6. a) Explain differential scanning calorimetry (DSC). [7M]
   b) Discuss the failure of refractories. [7M]

UNIT-IV

7. a) Give the importance of Proximate analysis of Coal. [7M]
   b) Write a note on synthetic petrol. [7M]

(OR)

8. a) Discuss liquefied petroleum gas. [7M]
   b) Explain octane and octane ratings. [7M]

UNIT-V

9. a) Explain briefly about boiler troubles. [7M]
   b) Explain internal treatments in softening of hard water by zeolite process. [7M]

(OR)

10 a) Give the steps involved in purification of water. [7M]
   b) Write about break point chlorination. [7M]

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Code No: **R201202** **R20** **SET -4**

I B. Tech II Semester Regular/Supplementary Examinations, July/August-2023
ENGINEERING CHEMISTRY
(Common to CE, ME, Agri E)

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) Explain preparation and properties of PVC. [7M]
   b) Write a note on Compounding of plastics. [7M]

(OR)

2. a) Give the preparation and applications of Buna S. [7M]
   b) Discuss about the biomedical polymers. [7M]

UNIT-II

3. a) Explain about CH_3OH-O_2 Fuel cell. [7M]
   b) Write a note on galvanic series. [7M]

(OR)

4. a) Summarize standard hydrogen electrode. [7M]
   b) Explain about factors influencing rate of corrosion. [7M]

UNIT-III

5. a) Explain sol-gel method in Nano materials. [7M]
   b) Apply BET (Brunauer Emmett Teller) method to characterize Nano Materials and explain. [7M]

(OR)

6. a) Explain Instrumentation and applications of thermo gravimetric analysis (TGA). [7M]
   b) Define refractories and give their classification. [7M]

UNIT-IV

7. a) Discuss about Introduction to alternative fuels. [7M]
   b) What is meant by calorific value? Give its importance in coal analysis. [7M]

(OR)

8. a) Write about anti-knocking agents. [7M]
   b) Explain Flue gas analysis by Orsat apparatus. [7M]

UNIT-V

9. a) Explain the steps involved in purification of water. [7M]
   b) Explain desalination of hard water by reverse osmosis. [7M]

(OR)

10 a) Discuss the determination of hardness by complexometric method. [7M]
   b) Explain the softening of hard water by the zeolite process. [7M]

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