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

**I B. Tech II Semester Regular Examinations, September- 2021**

# ENGINEERING CHEMISTRY

**(Comm. 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

| | | | |
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| 1 | a) | Define polymerization. Explain emulsion polymerization and mention its advantages. | (7M) |
| | b) | Explain preparation and application of BUNA-S and polycarbonates. | (7M) |
| | | Or | |
| 2 | a) | Discuss the recycling of e-plastic waste and mention its advantages. | (7M) |
| | b) | When does a polymer conduct electricity? Explain n-doped conducting polymers. | (7M) |

## UNIT-II

| | | | |
|---|---|---|---|
| 3 | a) | What is electrode potential? Explain determination of single electrode potential. | (7M) |
| | b) | Discuss electrochemical theory of corrosion. | (7M) |
| | | Or | |
| 4 | a) | Define battery. Explain working principle involved in zinc-air cell with neat sketch. | (7M) |
| | b) | Explain (i) electroplating (ii) electroless plating of nickel. | (7M) |

## UNIT-III

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| 5 | a) | Define nanomaterials. Explain preparation of metal oxides by sol-gel method. | (7M) |
| | b) | Explain manufacturing of cement. | (7M) |
| | | Or | |
| 6 | a) | Discuss the instrumentation and applications of TGA | (7M) |
| | b) | Explain thin film and thick film lubrication. | (7M) |

## UNIT-IV

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|---|---|---|---|
| 7 | a) | Define calorific value. Differentiate the higher and lower calorific values. | (7M) |
| | b) | Explain flue gas analysis by Orsat apparatus. | (7M) |
| | | Or | |
| 8 | a) | A coal has the following composition by weight: C = 90%, O = 3 %, S = 0.5%, N= 0.5%, H = 4% and remaining ash. Calculate the net and gross calorific value of coal. Latent heat of steam = 587 cal/g. | (7M) |
| | b) | Explain synthesis of petrol by Bergius process. | (7M) |

## UNIT-V

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| 9 | a) | What is hardness of water? Mention its units and types of hardness. | (7M) |
| | b) | Write notes on (i) break-point chlorination (ii) reverse osmosis | (7M) |
| | | Or | |
| 10 | a) | Explain softening of hard water by cation and anion exchange resins. | (7M) |
| | b) | Discuss in detail about boiler corrosion. | (7M) |



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