

R22

Code No: 181AJ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech I Year I Semester Examinations, September - 2023

ENGINEERING CHEMISTRY

(Common to EEE, CSE, IT, CSIT, CE(SE), CSE(CS), CSE(DS), CSD)

Time: 3 Hours

Max. Marks: 60

Note: This question paper contains two parts A and B.

i) Part- A for 10 marks, ii) Part - B for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of ten questions (numbered from 2 to 11) carrying 10 marks each. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

- Why hardness of water expressed in terms of CaCO_3 equivalents. [1]
- How are exhausted ion exchange resin regenerated? [1]
- What are the causes for corrosion? [1]
- What is difference between primary and secondary batteries? [1]
- Write any two applications of Bakelite. [1]
- What is the importance of measuring fixed carbon in coal? [1]
- Define HCV and LCV. [1]
- Give examples of biodegradable polymers. [1]
- What do mean by Cloud point. [1]
- What is the composition of cement? [1]

PART - B

(50 Marks)

- How can scale formation be prevented by Calgon conditioning? Explain it. [5]
- Mention advantages and disadvantages of ion exchange process of softening water over lime soda process. [5+5]

OR

- How the hardness of water is determined by EDTA method and give its advantages? [5]
- How caustic embrittlement occurs and give the chemical reactions involved in it? [5+5]

- Discuss the working of methanol-oxygen fuel cell. [5]
- Explain the nature of metal affecting the rate of corrosion. [5+5]

OR

- Discuss lithium ion battery. [5]
- Differentiate (i) anodic and cathodic coatings (ii) electro and electroless plating. [5+5]

QA

QA

QA

QA

QA

QA

QA

QA

- 6.a) Differentiate synthetic and natural rubber? Give the preparation and uses of two synthetic rubber
- b) Describe p-type and n-type of conducting polymers. [5+5]

OR

QA

- 7.a) Briefly discuss the preparation and properties of Bakelite.
- b) State the importance of biodegradable polymers. [5+5]

- 8.a) Discuss the various methods involved during refining of petroleum.
- b) Explain moving bed catalytic cracking with a labeled flow diagram. [5+5]

OR

QA

- 9.a) Explain how moisture, volatile matter and ash can be determined and write their significance.
- b) Discuss Natural gas and Bio-diesel. [5+5]

- 10.a) Discuss the manufacture of Portland cement.
- b) Write the classification of refractories with examples. [5+5]

OR

QA

- 11.a) Write a note on poly l-lactic acid.
- b) Outline (i) cloud and pour point (ii) flash and firepoint. [5+5]

QA

QA

QA

QA

QA

QA

QA

---ooOoo---

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA

QA