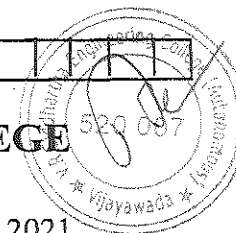


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VELAGAPUDI RAMAKRISHNA  
**SIDDHARTHA ENGINEERING COLLEGE**  
(AUTONOMOUS)



I/IV B.Tech. DEGREE EXAMINATION, OCTOBER, 2021

20BS1102/2102 ENGINEERING CHEMISTRY

( Regular Branches of CSE, ECE, EIE & IT and

Supplementary Branches of CE, EEE & ME )

*Time: 3 hours*

*Max. Marks: 70*

*Part-A is compulsory*

*Answer One Question from each Unit of Part - B*

*Answer to any single question or its part shall be written at one place only*

**PART-A**

**10 x 1 = 10M**

1.
  - a. What is sterilization of water? Name any two disinfectants used for sterilization of water?
  - b. What are the chemical reactions takes place in boiler corrosion?
  - c. Write the chemical reactions involved in Calgon conditioning?
  - d. What is eutectic mixture and what is its composition in Lead-Silver system.
  - e. Differentiate primary cells and secondary cells.
  - f. Explain why glass electrode cannot be used for solution of pH value above 9.0?
  - g. What is pitting? How it is created?
  - h. Give two examples of anodic inhibitors
  - i. List out any two applications of conducting polymers.
  - j. The presence of which element in a fuel make the difference between HCV & LCV. Justify?

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**PART-B**

**4 x 15 = 60M**

**UNIT-I**

2. a. What is meant by desalination? Explain Reverse Osmosis Process for the desalination of brackish water? **8M**
- b. What are scales and sludges? How they formed. Give the disadvantages of scales and sludges? **7M**

(or)

3. a. Explain caustic embrittlement in the boiler. Explain the causes and control measures? **7M**
- b. Explain the concept of breakpoint chlorination with the help of graph and write its significance? **8M**

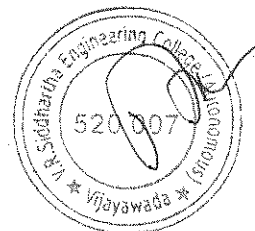
**UNIT-II**

4. a. Construct the P-T diagram of water system and explain in detail about the phase diagram of Water system? **7M**
- b. Explain the construction and working of Lithium Ion Battery and write its applications? **8M**

(or)

5. a. Explain the construction and working of calomel electrode with neat diagram? **7M**
- b. Discuss the phase diagram of lead-silver system, describing desilverization lead by Pattinson's process? **8M**

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**UNIT-III**

6. a. What is Electro chemical corrosion? Explain the mechanism of Evolution of  $H_2$  and Absorption of  $O_2$  in it? **9M**
- b. Write in brief on impressed current method of cathodic protection. **6M**

(or)

7. a. What are the main objectives of electro plating? Give an account of the method used in electroplating? **8M**
- b. Write a short note on galvanic series by discussing the characteristics? **7M**

**UNIT-IV**

8. a. What are conducting polymers? How are they classified? Explain the mechanism of conduction of P-doped polyacetylene? **9M**
- b. A coal sample has the following composition by weight C=79%,  $H_2$ =8%,  $O_2$ =5%, S=3% and  $N_2$ =1% rest is ash. Find the minimum weight and volume of air required to Burn 1kg of the coal sample? **6M**

(or)

9. a. Explain briefly the ultimate analysis of coal and its significance. **8M**
- b. Distinguish extrinsically and intrinsically conducting polymers along with examples? **7M**

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