

CODE: 17CA51101

B. Tech I Year II Semester (R17) Supplementary Examinations, July/August - 2018

ENGINEERING CHEMISTRY

(Common to EEE & CSE)

Time: 3 hours

Max Marks: 70

PART - A

1. Answer any **TEN** questions (10 x 2 = 20 Marks)
- (a) What is the advantage of reverse osmosis over ion-exchange process?
 - (b) Write a short note on caustic embrittlement?
 - (c) Discuss the phosphate conditioning?
 - (d) Describe condensation polymerization with examples?
 - (e) Give a brief account of vulcanization of rubber?
 - (f) Define conducting polymer? Write its applications?
 - (g) What do you understand about electroplating?
 - (h) Write construction of calomel electrode with neat diagram?
 - (i) Define octane number and centane number?
 - (j) Distinguish between gross and net calorific values?
 - (k) Define Composite material and write its applications?
 - (l) Describe the classification of refractories?

PART - B

Answer all **FIVE** units (5 x 10 = 50 Marks)

UNIT-I

2. (a) One litre of water from an underground reservoir in tirupathi town in Andhra Pradesh showed the following analysis for its contents. Mg (HCO₃)₂ = 42 Mg, Ca(HCO₃)₂ = 146 Mg, CaCl₂ = 71 Mg, NaOH = 40 Mg, MgSO₄ = 48 Mg, organic impurities = 100 Mg, Calculate temporary, permanent and total hardness?
- (b) What is the principle of EDTA method? Explain the estimation of hardness of water by complexometric method?

OR

3. (a) Explain the process of scales and sludge formation in boilers?
- (b) Describe the demineralization of water by ion-exchange method with neat diagram.

UNIT-II

4. (a) Explain the difference between thermosetting and thermoplastic materials with example.
- (b) Describe the preparation, properties and engineering applications of Bakelite.

OR

5. (a) Give the preparation properties and uses of
(i) Buna-s rubber (ii) Thiokol rubber
- (b) Distinguish between condensation polymerisation and addition polymerisation?

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UNIT-III

6. (a) Explain the functioning of a galvanic cell with neat diagram.
(b) Describe the construction of Ni-Cd cell with relevant reactions occurring during the discharge. Mentions its applications.

OR

7. (a) Give an account of any five factors that influence the rate of corrosion.
(b) Explain impressed current cathodic method of corrosion control with a neat diagram.

UNIT-IV

8. (a) Explain the proximate analysis of coal and its significance.
(b) Describe the fractional distillation of petroleum?

OR

9. (a) How calorific value of a gaseous fuel is determined by Junker's gas calorimeter? Describe the experiment with a neat diagram
(b) State and explain different mechanisms of lubrication with examples?

UNIT-V

10. (a) Write the important applications of Nano materials?
(b) Discuss the essential properties of a good refractory material and its applications?

OR

11. (a) Explain the setting and hardening of cement with relevant chemical reactions involved?
(b) Explain the Classification of Cement and Chemical Composition of Portland cement?
