

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations June - 2018**ENGINEERING CHEMISTRY****[Electrical and Electronics Engineering, Electronics and Communication Engineering,
Electronics and Instrumentation Engineering]**

Time: 3 hours

Max. Marks: 70

Answer One Question from each Unit**All questions carry equal marks****UNIT-I**

- 1 a) Define hardness of water and give various units of hardness, interrelate various units with p.p.m. 7 Marks
 - b) Explain the various disadvantages of hard water in domestic and industrial use. 7 Marks
- (OR)**
- 2 a) Engineer is asked to explore the suitability of SVEC ground water to startup a min STEAM power plant in the College campus. Water sample is observed to contain the following **CaCl₂, NaCl, MgCO₃, MgSO₄, O₂, HCl, SiO₂ and Oil**. Your answer should contain definition, disadvantages, reactions and removal methods for the foreseen boiler operational troubles. 8 Marks
 - b) Explain to a friend who is not registered in your course about **Why and How** "water Harvesting". 6 Marks

UNIT-II

- 3 a) Explain the conduction mechanism of any one conjugated conducting polymer. 7 Marks
 - b) Discuss the engineering applications of the plastics and bio-degradable polymers. 7 Marks
- (OR)**
- 4 a) Discuss the preparation, properties and uses of PC and PMMA resin. 7 Marks
 - b) Distinguish between thermo plastics and thermo sets. 7 Marks

UNIT-III

- 5 a) How can we design safer chemicals for environment pollution? Explain with the help of suitable examples. 7 Marks
 - b) Explain with the help of suitable examples how the properties of nanomaterials differ from those of the same materials in bulk size. 7 Marks
- (OR)**
- 6 Explain in detail about the classification of nanomaterials 14 Marks

UNIT-IV

- 7 Define fuel cell. Explain the construction, working of **H₂-O₂** fuel cell and write its applications. 14 Marks
- (OR)**
- 8 a) Explain the difference between a rechargeable battery and one that must be discarded. Use a NiCad battery and dry cell as examples. 8 Marks
 - b) Is there a difference between a galvanic cell and an electrochemical cell? Explain, giving examples to support your answer. 6 Marks

UNIT-V

- 9 a) What are the functions of lubricants? 6 Marks
 - b) What is galvanizing? Illustrate the Nickel electroplating. 8 Marks
- (OR)**
- 10 a) Explain the electrochemical mechanism of rusting of iron in humid atmosphere. Mention any four factors that affect the rate of corrosion. 8 Marks
 - b) How can you determine the flash and fire points of a lubricant with the help of a Pensky- Martin apparatus? 6 Marks

