

**COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING)  
DEGREE EXAMINATION, APRIL 2014**

(2009 Scheme)

EN/PTEN 09 104—ENGINEERING CHEMISTRY

Time : Three Hours

Maximum : 70 Marks

**Part A***Answer all questions.**Each question carries 2 marks.*

1. Mention the chemical species causing alkalinity in water.
2. What is *p*-type extrinsic semiconductor ? Give an example.
3. Write the chemical equation for the formation of nylon 6 : 6.
4. Write any *two* applications of electrochemical series.
5. What is thermal pollution ?

(5 × 2 = 10 marks)

**Part B***Answer any four questions.**Each question carries 5 marks.*

6. Write about the applications of carbon nanotubes and nanowires.
7. Discuss the various types of polymerization with suitable examples.
8. Explain the construction and functioning of hydrogen and oxygen fuel cells.
9. Describe the electrolytic bath for phosphate and chromate coatings.
10. Discuss the usage of solar cells and chemical sensors.
11. What is Electrochemical series ? What are its applications ?

(4 × 5 = 20 marks)

**Part C***Answer Section (a) or Section (b) of each question.**Each question carries 10 marks.*

12. (a) Explain all aspects of electrical conductivity in solids using band theory.

*Or*

- (b) Bring out the various steps involved in the purification of water for domestic use.

**Turn over**

(a) What are Synthetic Rubbers ? Give the preparation, structure and uses of any *four* synthetic rubbers.

*Or*

(b) What is Vulcanization ? Bring out the structure relationship to polymers.

(a) Explain the construction and functioning of lead acid accumulators and nickel-cadmium cells.

*Or*

(b) What is an Electrochemical cell ? How EMF is measured by using hydrogen electrodes and glass electrodes ?

(a) (i) Write a short account on air pollution.

(ii) Explain the cause and consequences of ozone depletion.

*Or*

(b) Explain the mechanism of wet corrosion. How corrosion is controlled by sacrificial anodic method and impressed current method.

(4 × 10 = 40 marks)