

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-1/2 EXAMINATION – WINTER 2021****Subject Code:3110001****Date:22/03/2022****Subject Name:Chemistry****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a)** Define the following terms with suitable examples. **03**  
(1) Electronic Configuration  
(2) Electro Negativity  
(3) Polymer
- (b)** What are Nano Materials? Mention the properties of Fullerenes. **04**
- (c)** How will you soften the water and list the methods of treating domestic water? **07**
- Q.2 (a)** Define the following terms with suitable examples. **03**  
(1) Desalination  
(2) Alloys  
(3) Inhibitors
- (b)** What is meant by Polymerization with examples? **04**
- (c)** Explain Lewis representation of simple molecules and ions with suitable examples. **07**
- OR**
- (c)** Give a detail study of various sources and impurities present in water and how can these impurities be removed. **07**
- Q.3 (a)** Define the following terms with suitable examples. **03**  
(1) Acids  
(2) Oxidation states  
(3) Orbital
- (b)** Write a short note on structure of an atom. **04**
- (c)** Mention physical properties of metals. **07**
- OR**
- Q.3 (a)** Define the following terms with suitable examples. **03**  
(1) Hard Water  
(2) Brackish Water  
(3) Glass Fibre
- (b)** Write a short note on Alloy with illustrations. **04**
- (c)** What is corrosion? Explain any one type of corrosion in detail with a diagram. **07**
- Q.4 (a)** Define the following terms with suitable examples. **03**  
(1) Rubber  
(2) Vulcanisation  
(3) Fibre
- (b)** Write a short note on liquid crystals. **04**
- (c)** Give a detail study of fibres along with suitable examples. **07**
- OR**
- Q.4 (a)** Define the following terms with suitable examples. **03**  
(1) Fuels  
(2) Calorific value

- (3) Fermentation
- (b) Write a short note on “top down and bottom up” approach for synthesizing a nano material. 04
- (c) How will you analyze a coal sample? Explain. 07
- Q.5 (a) Give full form of the following along with formula- 03
- (1) PE
  - (2) ABS
  - (3) PVC
- (b) Write a short note on characteristics of a good fuel. 04
- (c) How will you conduct a fractional distillation of crude oil? 07
- OR**
- Q.5 (a) Define the following terms with suitable examples. 03
- (1) Cetane number
  - (2) Conductance
  - (3) pH
- (b) Write a short note on enzyme. 04
- (c) Explain principles of spectroscopy with their applications. 07

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