

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-I &II (NEW) EXAMINATION – SUMMER-2019****Subject Code: 3110001****Date: 03/06/2019****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.

		Marks
Q.1	(a) Define electron affinity and discuss its variation in periodic table.	03
	(b) What do you understand by hardness of water? Differentiate between temporary and permanent hardness.	04
	(c) What is polymerization? Give a detailed classification of polymers with suitable examples.	07
Q.2	(a) What is vulcanization of Rubber? Why vulcanization is done?	03
	(b) Write characteristics of a good fuel.	04
	(c) With a neat and well labeled diagram, explain fractional distillation of petroleum.	07
	OR	
	(c) Give classification of fuel. Discuss proximate analysis of fuel.	07
Q.3	(a) Write monomers, properties and uses of following polymers: (i) Bakelite (ii) Nylon 66	03
	(b) Answer the following: (i) H ₂ O is liquid at room temperature while H ₂ S is gas. Why? (ii) What is coordinate bond? Give example of a coordinate compound.	04
	(c) Discuss 'Zeolite' processes of softening of water with neat diagram.	07
	OR	
Q.3	(a) Define pH. Calculate pH of .02 N H ₂ SO ₄ .	03
	(b) Differentiate between: (i) Stretching and bending vibration (j) Thermosetting and thermoplastic polymer	04
	(c) Write a note on disadvantages of using hard water in boiler.	07
Q.4	(a) What are alloys? Give example and explain why alloying is done?	03
	(b) Write a short note on 'top down' and 'bottom up approach' to synthesize Nanomaterials.	04
	(c) What is 'Fermentation'? Explain manufacturing of ethanol by fermentation process.	07
	OR	
Q.4	(a) Write a brief note on physical properties of metals.	03
	(b) What are Nanomaterials? Write a note on application of Nanomaterials.	04

- (c) Discuss application of biotechnology in agriculture and medicinal field. **07**
- Q.5** (a) What are fullerenes? Explain properties of fullerenes in short. **03**
(b) Write principle of UV-VIS spectroscopy. **04**
(c) What is corrosion? Explain wet corrosion or electrochemical corrosion of iron. **07**
- OR**
- Q.5** (a) Give Reason: **03**
(i) First ionization energy (IE_1) of Nitrogen (atomic Number = 7) is higher than Oxygen (atomic Number = 8).
(ii) Noble gases (Group 18) have zero valency.
- (b) Answer the following: **04**
(i) What are polar and non-polar covalent bonds?
(ii) Write electronic configuration of Cr (Atomic Number 24)
- (c) Write a brief note on protective coating. **07**

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