

**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.

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

(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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