

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE –SEMESTER 1&2(NEW SYLLABUS)EXAMINATION- WINTER 2018**

**Subject Code: 3110001****Date: 04-01-2019****Subject Name: Chemistry****Time: 10:30 am to 01:00 pm****Total Marks: 70****Instructions:**

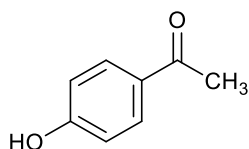
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	<b>Marks</b>
<b>Q.1 (a)</b> Discuss the periodic trends of followings- a. Electron negativity b. Ionization enthalpy c. Electron affinity	<b>03</b>
<b>(b)</b> Give reason- a. Ag <sub>2</sub> S ore is more abundant in nature than Ag <sub>2</sub> O ore. b. LiCl has more covalent characters than NaCl. c. CO <sub>2</sub> is linear in structure while SO <sub>2</sub> is bent. d. Vulcanized rubber is more stable and stronger.	<b>04</b>
<b>(c)</b> Explain the suitable method to analyze the percentage of moisture, volatile matter and ash content in a coal sample.	<b>07</b>
<b>Q.2 (a)</b> What do you understand by hardness of water? Name any four salts those are responsible for the hardness of water.	<b>03</b>
<b>(b)</b> Give the reaction for synthesis of biodegradable polymer nylon-2-nylon-6. Write the name the monomers.	<b>04</b>
<b>(c)</b> What is corrosion? Do you think rusting is electrochemical process? Justify with the help of involved redox reactions.	<b>07</b>
<b>OR</b>	
<b>(c)</b> What are alloys? Do you think alloys are better choice than pure metal for making of various tools? Justify your answer with the help of examples.	<b>07</b>
<b>Q.3 (a)</b> What are the allowed and forbidden transitions?	<b>03</b>
<b>(b)</b> Give labelled schematic diagram for refining of petroleum by fractional distillation.	<b>04</b>
<b>(c)</b> What are fibers? Give the reaction for preparation of terylene polyester and its important properties.	<b>07</b>
<b>OR</b>	
<b>Q.3 (a)</b> Distinguish between absorption and emission spectra.	<b>03</b>
<b>(b)</b> Give labelled schematic diagram for treatment of waste water.	<b>04</b>
<b>(c)</b> What are elastomers? Give reaction for preparation of neoprene rubber and its important properties.	<b>07</b>
<b>Q.4 (a)</b> Write any three applications of nanomaterial in textile industries.	<b>03</b>
<b>(b)</b> A unique phase of matter shows long range order and used in the display systems. Give the name of that phase and discuss its other three applications.	<b>04</b>
<b>(c)</b> Explain the fermentation processes for preparation of Ethanol.	<b>07</b>
<b>OR</b>	
<b>Q.4 (a)</b> Discuss the applications of nanomaterial in catalysis.	<b>03</b>
<b>(b)</b> Write any one specific application of following polymers- a. Polyvinyl chloride    b. Glyptal    c. Low density polyethene    d. High density polyethene	<b>04</b>

- (c) Explain the fermentation processes for preparation of Acetic acid. **07**
- Q.5** (a) Write the any three advantages of bio-fertilizers over chemical fertilizers. **03**
- (b) Explain the top down method for synthesis of nano-materials. **04**
- (c) How would you find the equivalence point in Acid–Base titration by conductivity meter? Explain. **07**

**OR**

- Q.5** (a) Write any six characteristic of good fuel. **03**
- (b) Explain the bottom up method for synthesis of nano-materials. **04**
- (c) What is infra-red (IR) spectroscopy? Why symmetrical stretching in CO<sub>2</sub> is IR inactive? Below given molecules shows some strong IR absorbance bands in the spectrum. Assign the given bands (1740, 2850, 3050 and 3400 cm<sup>-1</sup>) to appropriate bonds present in molecule. **07**



1740, 2850, 3050 and 3400 cm<sup>-1</sup>

(Methyl) C-H stretching -----

(Phenyl) C-H stretching -----

C=O stretching -----

(Phenyl) O-H stretching -----

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