

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.

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

(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

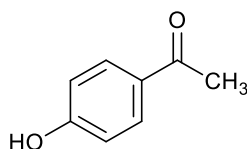
(c) How would you find the equivalence point in Acid–Base titration by conductivity meter? Explain. 07

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_2 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^{-1}) to appropriate bonds present in molecule. 07



1740, 2850, 3050 and 3400 cm^{-1}

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

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

C=O stretching -----

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