Seat No.: _____ Enrolment No._____

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_2S ore is more abundant in nature than Ag_2O 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**

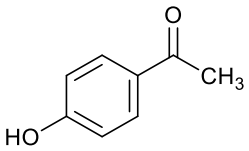
(c) How would you find the equivalence point in Acid–Base titration by conductivity meter? Explain. **07**

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^{-}

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

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

C=O stretching ----------

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

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