

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-IV (NEW) EXAMINATION – WINTER 2020****Subject Code:2140501****Date:19/02/2021****Subject Name:Physical And Inorganic Chemistry****Time:02:30 PM TO 04:30 PM****Total Marks:56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	MARKS
Q.1 (a) Write the precautions during the storage of explosives.	03
(b) Explain hydrogen bonding and its types with suitable examples.	04
(c) What do you understand by reduced phase rule? Draw a neat phase diagram of silver-lead eutectic system and discuss its salient features.	07
Q.2 (a) Compare the properties of α , β and γ particles.	03
(b) Draw the phase diagram of water system. Discuss its salient features.	04
(c) Explain Handerson – Hasselbatch equation for buffer solutions.	07
Q.3 (a) Discuss of Standard Hydrogen Electrode.	03
(b) Determine ΔH of the reaction, $C_{(s)} + 2H_{2(g)} \rightarrow CH_{4(g)}$ from the following data:	04
(i) $C_{(s)} + O_{2(g)} \rightarrow CO_{2(g)}$ $\Delta H = -393.7$ KJ	
(ii) $H_{2(g)} + \frac{1}{2} O_{2(g)} \rightarrow H_2O_{(l)}$ $\Delta H = -285.7$ KJ	
(iii) $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(l)}$ $\Delta H = -890.3$ KJ	
(c) Explain the each part of instrumentation for visible spectrophotometer.	07
Q.4 (a) Derive Pseudo-order reaction.	03
(b) What is the basic principle used in conductometry titration? Briefly discuss any two of its applications.	04
(c) Deduce the rate expression for second order reaction where both the concentration terms are same.	07
Q.5 (a) Differentiate between Nuclear fission & Nuclear fusion reaction.	03
(b) Differentiate between order of a reaction and molecularity of a reaction.	04
(c) What is adsorption spectroscopy? Derive Lambert's-Beer's law related equations in detail and state its limitation.	07
Q.6 (a) Describe the process of ore dressing by Froth flotation.	03
(b) Describe any one method for extraction of aluminum from its ore.	04
(c) What is a nuclear reactor? With a neat diagram of light – water reactor, describe its main parts briefly.	07

- Q.7** (a) Write the important properties of steel. **03**
(b) Discuss the method of preparation and uses of explosives. **04**
(c) What is chromatography? Explain HPLC giving neat and well labeled diagram. **07**
- Q.8** (a) Write about “Zero order reaction” by taking suitable example. **03**
(b) Write a note on radioactive decay. **04**
(c) Explain the method of detection and measurement of radioactivity. **07**
