

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION	SUMMER SEMESTER, 2020-2021
DURATION: 1 HOUR 30 MINUTES	FULL MARKS: 75

Chem 4241: Chemistry

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer **all 3 (three)** questions. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1.	a)	State and explain Lowry-Bronsted and Lewis concepts of acids and bases. Mention the salient features of the concepts with suitable examples.	9
	b)	What are Ionic Product of water and pH? Name two acid base indicators giving structure of at least one.	7
	c)	What is a buffer solution? Describe the mechanism and types of buffer action with example.	9
2.	a)	What is buffer solution? Describe the mechanism and types of buffer action with example	6
	b)	Discuss with the help of molecular orbital diagram the magnetic property and bond order in the formation CO and O ₂ ⁻² molecules.	14
	c)	Prove argon is monoatomic in character.	5
3.	a)	What is energy of activation (E _a)? Derive an equation showing the relationship between temperature and rate constant (k).	10
	b)	Derive an equation for a second order reaction in the Integrated form. What's the half-life of such a reaction?	10
	c)	The value of half-life (t _{1/2}) for a first order reaction is 1000seconds. At what time 1/10 th of the reactant will remain unreacted?	5