Name of Student [redacted] University Roll No.:	Printed Pages:1

School of Engineering

First Sessional Theory Examination, Odd Semester (AS: 2024-25)

Branch: First Year Semester: 1

Course Title: Engineering Chemistry Course Code: NBS4103	Max Marks: 30 Time: 1 *HOUR*

Instructions if any: Read the question Carefully.

	SECTION 'A' Q.N.1. Attempt all parts of the following:	Course Objective	Marks
a)	Define threshold energy.	CO 1	1
b)	Give all four quantum number for $4S^1$	CO 2	1
c)	Define order of reaction.	CO 2	1
d)	Derive half-life equation for first order reaction.	CO 4	1
e)	Discuss conductivity of Graphite.	CO 2	1

	SECTION 'B' Q.N.2. Attempt any two parts of the following:	Course Objective	Marks
a)	Discuss the classification of liquid crystal and its application. Discuss structure and application of Fullerenes	CO 1	7.5
b)	Derive density of unit cell? Silver crystal has a face-centered cubic lattice structure. The edge length of unit cell is 287 pm. Calculate the density of Silver. Atomic mass of Silver = 108	CO 1	7.5
c)	Write about molecular orbital theory. Draw the energy label diagram of HF molecule.	CO2	7.5

	SECTION 'C' Q.N.3. Attempt any one part of the following:	Course Objective	Marks
a)	Draw energy level diagram of N_2 and O_2 molecule. Give the configuration and magnetic behavior of molecules.	CO1	10
b)	Derive second order reaction when the concentrations of reactants are same and different. (both derivation)	CO4	10
c)	Write about nanomaterials. Classify the nanomaterials on the basis of dimension. Give sol gel method for the synthesis of Nano sized metal oxide. OR What are stoichiometric and non-stoichiometric defects, discus their types with suitable diagram.	CO 1 CO 4	

Table 1: Mapping between COs and questions
(Number of COs may vary from course to course)

COs	Questions Numbers	Total Marks
CO1	1a,2a,2b,3a,3c	1+7.5+7.5+10+10=36
CO2	1b,1c,1e,2d	1+1+1+7.5=10.5
CO4	1d,3b	1+7.5+10=11

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