

Code: 23BS1202

**I B.Tech - II Semester – Regular / Supplementary Examinations
JUNE 2026**

**CHEMISTRY
(Common for IT, AIML, DS)**

Duration: 3 hours

Max. Marks: 70

 Note: 1. This question paper contains two Parts A and B.

2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.

3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.

4. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

PART – A

		BL	CO
1.a)	Define bond order and explain its significance.	L2	CO1
1.b)	State Heisenberg's uncertainty principle.	L2	CO1
1.c)	Explain intrinsic semiconductor with example.	L2	CO2
1.d)	Identify any two applications of nanomaterials.	L3	CO2
1.e)	Describe electrode potential.	L3	CO2
1.f)	Explain the concept of fuel cell. Give an example.	L2	CO2
1.g)	Describe thermoplastics with example.	L3	CO3
1.h)	Identify any two properties of Buna-S.	L3	CO3
1.i)	State Beer-Lambert's law.	L2	CO3
1.j)	Describe mobile phase in chromatography.	L3	CO3

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Explain molecular orbital theory of O ₂ with energy level diagram.	L4	CO4	5 M
	b)	Calculate bond order of CO and comment on stability.	L3	CO2	5 M
OR					
3	a)	Explain particle in one-dimensional box.	L4	CO4	5 M
	b)	Describe π -molecular orbitals of benzene.	L3	CO2	5 M
UNIT-II					
4	a)	Explain classification of nanomaterials.	L4	CO4	5 M
	b)	Discuss properties and applications of graphene and CNTs.	L3	CO2	5 M
OR					
5	a)	Explain band theory of semiconductors.	L4	CO4	5 M
	b)	Describe superconductors and their applications.	L3	CO2	5 M
UNIT-III					
6	a)	Derive Nernst equation.	L3	CO2	5 M
	b)	Calculate EMF of Daniell cell.	L3	CO2	5 M
OR					
7	a)	Explain construction and working of lithium-ion battery.	L4	CO4	5 M

	b)	Construct and working of hydrogen-oxygen fuel cell.	L3	CO2	5 M
UNIT-IV					
8	a)	Explain chain growth and step growth polymerization.	L4	CO5	5 M
	b)	Describe preparation and applications of Nylon-6,6.	L3	CO3	5 M
OR					
9	a)	Explain conducting polymers with mechanism.	L4	CO5	5 M
	b)	Discuss biodegradable polymers (PGA & PLA).	L3	CO3	5 M
UNIT-V					
10	a)	Explain Beer-Lambert's law with limitations.	L4	CO5	5 M
	b)	Describe UV-Visible spectroscopy instrumentation.	L3	CO3	5 M
OR					
11	a)	Explain principle and applications of HPLC.	L4	CO5	5 M
	b)	Classify chromatography techniques with examples.	L4	CO5	5 M