Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐

SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY, PRAYAGRAJ

Subject Code : BAS202
Course: B.Tech.
Subject : Engg. Chemistry
SEMESTER: II

SECOND SESSIONAL EXAMINATION, EVEN SEMESTER, (2024-2025)
Branch : All

Maximum Marks – 30

Time –1hr 30 min

1. Attempt any *FIVE* questions.

Q N	QUESTION	Marks	CO	BL
a.	How many NMR signals in CH3CH2OH and CH3OH.	2	CO2	L3
b.	Define the Auxochrome.	2	CO2	L1
c.	Why is TMS used as an internal standard in NMR spectroscopy?	2	CO2	L3
d.	What is Chromophore?	2	CO2	L1
e.	What are chemical shifts?	2	CO2	L2
f.	Calculate absorbance if % transmittance (%T) of a solution is 80.	2	CO2	L3

2. Attempt any *ONE* of the following.

Q N	QUESTION	Marks	CO	BL
a.	Explain Beer-Lambert's law.	5	CO2	L1
b.	Explain the basic principle of IR spectroscopy. What is significance of fingerprint region in IR spectroscopy?	5	CO2	L3
c.	What type of electronic transition is involved in UV-visible spectroscopy? Explain the absorption and intensity shift in the UV spectroscopy.	5	CO2	L2

3. Attempt any *FIVE* questions.

Q N	QUESTION	Marks	CO	BL
a.	Write the function of salt bridge.	2	CO3	L1
b.	Write the difference between electrochemical cell (galvanic cell) and electrolytic cell .	2	CO3	L1
c.	What is Nernst equation?	2	CO3	L1
d.	What is the EMF of the cell?	2	CO3	L2
e.	What is electrode potential?	2	CO3	L3
f.	What is primary cell	2	CO3	L1

4. Attempt any *ONE* of the following.

Q N	QUESTION	Marks	CO	BL
a.	Define the term batteries. Explain the construction of Lead acid battery. Write all the chemical reactions taking place during charging and discharging of lead acid battery.	5	CO3	L2
b.	A Danielle cell is represented as: $Zn|Zn^{2+}(1M)||Cu^{2+}(0.01M)|Cu$,Calculate the EMF of the cell at 298 K. Given :$E°cell =1.10$ and $n=2$	5	CO3	L4
c.	What is the effect of increasing ion concentration on the electrode potential according to the Nernst Equation?	5	CO3	L4

• Bloom's Taxonomy Level (BL) :-Remember (L1), Understanding (L2), Apply (L3), Analyze (L4), Evaluating(L5),