

Hour	Unit	Topic	Teaching Methodology	Remarks
1	I	Types of Hybridisations	Whiteboard	
2	I	VSEPR Theory	Whiteboard	
3	I	Molecular Orbital Theory – Basics	Whiteboard	
4	I	Bonding in Homonuclear Diatomic Molecules	Whiteboard	
5	I	Bonding in Heteronuclear Diatomic Molecules	Whiteboard	
6	I	Energy Level Diagrams: N ₂ and O ₂	Whiteboard	
7	I	Energy Level Diagrams: CO and NO	Whiteboard	
8	I	π -Molecular Orbitals of Butadiene	Whiteboard	
9	I	π -Molecular Orbitals of Benzene	Whiteboard	
10	I	Calculation of Bond Order	Whiteboard	
11	II	Electromagnetic Spectrum	Whiteboard	
12	II	Absorption of Radiation & Beer-Lambert's Law	Whiteboard	
13	II	UV-Visible Spectroscopy – Instrumentation	Whiteboard	
14	II	Electronic Transitions, Chromophore & Auxochrome	Whiteboard	
15	II	Absorption and Intensity Shifts	Whiteboard	
16	II	IR Spectroscopy – Instrumentation & Fundamentals	Whiteboard	
17	II	Fingerprint Region in IR	Whiteboard	
18	II	NMR – Principle & Equivalent/Non-Equivalent Protons	Whiteboard	
19	II	Chemical Shift, Splitting & Coupling Constant	Whiteboard	
20	III	Electrochemical Cell & Nernst Equation	Whiteboard	
21	III	EMF Calculations & Numerical Problems	Whiteboard	
22	III	Potentiometry & Redox Titrations	Whiteboard	
23	III	Conductivity & Conductometric Titrations	Whiteboard	
24	III	Electrochemical Sensors	Whiteboard	
25	III	Reference Electrodes – Calomel & SHE	Whiteboard	
26	III	Primary Cells – Zinc-Air Battery	Whiteboard	
27	III	Secondary Cells – Lithium-Ion Battery	Whiteboard	
28	III	Fuel Cells – Hydrogen-Oxygen	Whiteboard	

29	III	PEMFC – Principle & Working	Whiteboard	
30	IV	Introduction to Polymers & Functionality of Monomers	Whiteboard	
31	IV	Chain Growth & Step Growth Polymerization	Whiteboard	
32	IV	Coordination Polymerization & Mechanism	Whiteboard	
33	IV	Thermoplastics vs Thermosetting Plastics	Whiteboard	
34	IV	PVC – Preparation, Properties, Applications	Whiteboard	
35	IV	Teflon & Bakelite – Preparation & Uses	Whiteboard	
36	IV	Nylon-6,6 & PET – Preparation & Uses	Whiteboard	
37	IV	Elastomers – Buna-S & Buna-N	Whiteboard	
38	IV	Conducting Polymers – Polyacetylene & Polyaniline	Whiteboard	
39	IV	Mechanism of Conduction & Applications	Whiteboard	
40	IV	Biodegradable Polymers – PHA & PLA	Whiteboard	
41	V	Semiconductors – Introduction & Band Theory	Whiteboard	
42	V	Elemental, Intrinsic & Extrinsic Semiconductors	Whiteboard	
43	V	Superconductors – Introduction & Preparation of $\text{YBa}_2\text{Cu}_3\text{O}_{7-y}$	Whiteboard	
44	V	Properties & Applications of Superconductors	Whiteboard	
45	V	Supercapacitors – Principle & Mechanism	Whiteboard	
46	V	Applications of Supercapacitors	Whiteboard	
47	V	Nanomaterials – Introduction & Classification	Whiteboard	
48	V	Properties & Applications: Fullerenes, CNTs, Graphene	Whiteboard	