

PERFORMA OF LESSON PLAN

NAME OF THE FACULTY : SMT.ARCHANA SHARMA

DISCIPLINE : MECH. ENGG.

SEMESTER: SECOND

SUBJECT : APPLIED CHEMISTRY

LESSON PLAN DURATION : 15

WEEKS(w.e.f. 06/03/23)

WORK LOAD PER WEEK: Lectures = 3+4

WEEK	THEORY	
	LECTURE DAY	TOPIC (WITH ASSIGNMENT & TESTS)
1	1	Introduction of Atomic Structure, Bohr's model of atom
	2	Dual character of matter :derivation of de-Broglie's equation Heisenberg's Principle of Uncertainty, modern concept of atomic structure
	3	Definition of orbitals shapes of s,p and d-orbitals
2	4	Quantum numbers and their significance
	5	Aufbau and Pauli's exclusion principles Hund's rule
	6	Electronic configuration of elements upto atomic number 30.
3	7	Periodic Table Modern Periodic law and Periodic table, Classification of elements into s,p.
	8	Classification of elements into d,f-blocks, metals, non-metals and metalloids
	9	Chemical bonding: cause of bonding, ionic bond Physical properties of ionic,
4	10	Covalent bond, and metallic bond (electrons model), Physical properties
	11	Doubt Quarries and Revision
	12	Metals: mechanical properties of metals such as conductivity, elasticity, strength and stiffness, luster, hardness, toughness, ductility, malleability
1st Sessional test 05.04.2023 TO 11.04.2023		
5	13	Metals: mechanical properties of metals such as, brittleness, and impact resistance and their uses. Definition of a mineral, ore, gangue, flux and slag
	14	Metallurgy of iron from hematite using a blast furnace Commercial varieties of iron
	15	Alloys: definition, necessity of making alloys, composition, properties and uses of duralumin and steel. Heat treatment of steel-normalizing, annealing, quenching, tempering.
6	16	Doubt Quarries and Revision
	17	Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v), normality, molarity and molality and ppm.
	18	Simple problems on solution preparation
7	19	Arrhenius concept of acids and bases, strong and weak acids and bases, pH value of a solution and its significance, pH scale
	20	Simple numerical problems on p _H of acids and bases.
	21	Hard and soft water, causes of hardness of water, types of hardness – temporary and permanent hardness

8	22	Expression of hardness of water, ppm unit of hardness; disadvantages of hard Water;removal of hardness
	23	Removal of temporary hardness by boiling and Clark's method; removal of permanent hardness of water by Ion-Exchange method
	24	Boiler problems caused by hard water: scale and sludge formation, priming and foaming, caustic embrittlement; water sterilization by chlorine, UV radiation and RO
9	25	Doubt Quarries and Revision
	26	Fuels: definition and classification of higher and lower calorific values, units of calorific value
	27	Characteristics of an ideal fuel. Petroleum: composition and refining of petroleum
2ND Sessional test 08.05.2023 TO 11.05.2023		
10	28	Gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG
	29	Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel.
	30	Lubricants-Functions and qualities of a good lubricant, classification of lubricants
11	31	Lubrication mechanism (brief idea only)
	32	Physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point.
	33	Doubt Quarries and Revision
12	34	Polymers and Plastics: definition of polymer, classification, addition and condensation polymerization
	35	Preparation properties and uses of polythene, PVC, Nylon-66
	36	Preparation properties and uses Bakelite; definition of plastic
13	37	Thermoplastics and thermosetting polymers; natural rubber and
	38	Corrosion: definition, dry and wet corrosion
	39	Factors affecting rate of corrosion, methods of prevention of corrosion—hot dipping
14	40	Prevention of corrosion metal cladding, cementation, quenching, cathodic protection methods
	41	Introduction and application of nanotechnology; nano-materials
	42	Classification, applications of nanotechnology in various
3rd Sessional test 05.06.2023 TO 09.06.2023		
15	43	Doubt Quarries and Revision
	44	Revision and discussion of previous year Q. Papers
	45	Revision and discussion of previous year Q. Papers

Final Theory Exams tentative w.e.f. 05.07.2023 to