

PERFORMA OF LESSON PLAN

NAME OF THE FACULTY : Bhawna Rani
 DISCIPLINE : Civil engineering
 SEMESTER : First
 SUBJECT : APPLIED CHEMISTRY
 LESSON PLAN DURATION :15 WEEKS

WORK LOAD PER WEEK :Lectures=3+2

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 up to 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 (electron sea or gas 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		
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 haematite 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 pH 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'smethod; removalofpermanent hardness of water by Ion-Exchange method
	24	Boiler problems caused byhard water: scale and sludge formation, priming and foaming, caustic embrittlement;watersterilizationbychlorine,UVradiationandRO
9	25	Doubt Quarries and Revision
	26	Fuels:definitionandclassificationofhigherandlowercalorificvalues,unitsofcalorificva
	27	Characteristics of an ideal fuel. Petroleum: composition and refining of petroleum
2nd Sessional Test		
10	28	Gaseousfuels: composition, properties and uses of CNG, PNG, LNG, LPG
	29	Relative advantages of liquidandgaseousfuels oversolidfuels.Scopeofhydrogenasfuturefuel.
	30	Lubricants-Functionsandqualitiesofagoodlubricant,classificationoflubricants
11	31	Lubrication mechanism (brief idea only
	32	Physical properties (brief idea only) of alubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pourpoint.
	33	Doubt Quarries and Revision
12	34	PolymersandPlastics:definitionofpolymer,classification,additionandcondensationpo lymerization
	35	Preparationpropertiesandusesofpolythene,PVC,Nylon-66
	36	Preparationpropertiesanduses Bakelite;definition of plastic
13	37	Thermoplastics and thermosetting polymers; natural rubber and neoprene,othersyntheticrubbers (names only).
	38	Corrosion: definition, dry and wet corrosion
	39	Factors affecting rate of corrosion, methods ofpreventionofcorrosion—hotdipping
14	40	Preventionofcorrosion metalcladding,cementation,quenching,cathodicprotectionmethods
	41	Introductionandapplicationofnanotechnology:nano-materials
	42	Classification,applications ofnanotechnologyinvarious
3rd Sessional test		
15	43	Doubt Quarries and Revision
	44	Revision and discussion of previous year Q. Papers
	45	Revision and discussion of previous year Q. Papers