Lesson Plan (Ist Semester)

Mathematics-1

Week	Theory/Practical	
	Lecture Day	**Topic Including(assignment/Test)**
Ist	**1**	Introduction to syllabus and evaluation scheme
	2	**Unit1 :-Algebra** **Complex Numbers** Definition of Complex Number, Real and Imaginary Parts of Complex Numbers
	3	Polar and Cartesian form and their interconversion
	4	Conjugate of Complex Number, Modulus and Amplitude
IInd	**1**	Addition Subtraction of Complex Numbers
	2	Multiplication and Division
	3	Revision of Complex Numbers
	4	**Logarithm** Logrithm and their basic property
IIIrd	**1**	Logrithm and their basic property
	2	Revision of Logarithm
	3	**Unit2:-Binomial Theorem** **Permutation and Combination** Meaning of ${}^{n}P_{r}$ and ${}^{n}C_{r}$
	4	Examples basis on ${}^{n}P_{r}$ and ${}^{n}C_{r}$
IVth	**1**	**Binomial Theorem** Binomial theorem for positive integral index without proof
	2	Expansion and General form of Binomial Theorem
	3	Binomial theorem for any index without proof expansion upto three terms
	4	Binomial theorem for any index without proof expansion upto three terms
Vth	**1**	First Binomial Approximation with application engineering problem
	2	Revision of Binomial Theorem
	3	**Determinant and Matrices** Evaluation of Determinants (upto second order)
	4	Solution of Equation upto 2 unknown by Cramer's rule
VIth	**1**	First Sessional Test(Tentative)
	2	First Sessional Test(Tentative)
	3	First Sessional Test(Tentative)
	4	Definition of Matrices and its types
VIIth	**1**	Addition and Subtraction of Matrices (upto second order)
	2	Multiplication of Matrices (upto second order)
	3	Revision of Determinants and Matrices
	4	**Unit3:-** **Trignometry** Concept of angle ,Measurement of angle in degree , grades, radians
VIIIth	**1**	Interconversion of Degree ,grade ,and Radian
	2	T-ratios of Allied Angles(without proof)
	3	Sum,Difference formulae and their applications(without proof)
	4	Product Formulae(Transformation of Product to Sum,Difference and vice versa)
IXth	**1**	Revision of Trignometry sums
	2	Application of Trignometric terms in Engineering problem such as to find an angle of elevation,Height ,Distance etc.,
	3	Application of Trignometric terms in Engineering problem such as to find an angle of elevation,Height ,Distance etc.,
	4	Revision of Heights and Distance Sums
Xth	**1**	**Unit4:-** **Co ordinate Geometry** Distance between two points

	2	Mid Point Formulae ,Centroid of vertices of a triangle
	3	Slope of line
	4	Equation of straight line in various standard forms(without proof)
XIth	**1**	Second Sessional Test(Tentative)
	2	Second Sessional Test(Tentative)
	3	Second Sessional Test(Tentative)
	4	Slope intercept form , intercept form , one point form
XIIth	**1**	Two point form ,Symmetric form ,Normal form and General form of a straight line
	2	Intersection of two straight lines
	3	Concurrency of lines, Angle between two straight lines
	4	Parallel and Perpendicular lines, Perpendicular distance formula
XIIIth	**1**	Conversion of general form of equation to various forms
	2	Revision of Straight lines
	3	**Unit5:- Geometry of Circles and softwares** Introduction to circles :-General equation of circle and its characteristics
	4	To find equation of circle given centre and radius
XIVth	**1**	To find equation of circle given three points lying on it.
	2	To find equation of circle given coordinates of end points of a diameter.
	3	**MAT Lab or SciLab software** Theoretical introduction of MAT LAB or SciLab
	4	Simple calculator(Addition and subtraction of value – Trignometry and inverse Trignometry function)/General Practice
XVth	**1**	Simple calculator(Addition and subtraction of value – Trignometry and inverse Trignometry function)/General Practice
	2	Third Sessional Test(Tentative)
	3	Third Sessional Test(Tentative)
	4	Third Sessional Test(Tentative)
XVIth	**1**	Revision of Syllabus
	2	Revision of Syllabus
	3	Discussion of Assignments
	4	Discussion of Previous Papers

Lesson Plan (Ist Semester)

English-1

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment/ test)**	**Practical Day**	**Topic**
Ist	**1**	**Introduction to syllabus.** **Unit1:-** Techniques of reading skimming and scanning	**1**	**Reading:-**Comprehension exercises of unseen passages along with the lesson prescribed.(Group-1)
	2	Extensive and intensive reading : Textual study	**2**	**Reading:-**Comprehension exercises of unseen passages along with the lesson prescribed.(Group-2)
2nd	**1**	Revision of above chapters	**1**	**Reading:-**Vocublary enrichment and grammar exercices based on the selected readings(Group-1)
	2	**Unit2:-** Concept and process of communication	**2**	**Reading:-**Comprehension exercises of unseen passages along with the lesson prescribed.(Group-2)
3rd	**1**	Types of Communication(verbal communication)	**1**	**Reading:-**Reading aloud newspaper headlines and important articles(Group-1)
	2	Revision of above topics	**2**	**Reading:-** Reading aloud newspaper headlines and important articles (Group-2)
4th	**1**	**Unit3:-** Nouns,Pronouns, Articles	**1**	**Fundamentals of Communiacation:-** Introducing oneself,others and leave taking(talking about yourself)(Group 1)
	2	Nouns,Pronouns, Articles	**2**	**Fundamentals of Communiacation:-** Introducing oneself,others and leave taking(talking about yourself)(Group 2)
5th	**1**	**Unit4:-** Significance, essentials and effectiveness of written communication, Netiquettes	**1**	**Fundamentals of Communiacation:-** Just a Minute(JAM) sessions:speaking extempore for one minute on given topics(Group 1)
	2	Notice Writing, Official letters and e-mails,	**2**	**Fundamentals of Communiacation:-** Just a Minute(JAM) sessions:speaking extempore for one minute on given topics (Group 2)
6th	**1**	First Sessional Test(Tentative)	**1**	First Sessional Test(Tentative)

	2	First Sessional Test(Tentative)	**2**	First Sessional Test(Tentative)
7th	**1**	Notice writing, Official letters and e-mails,	**1**	**Fundamentals of Communiacation:-** Situational conversation:offering responding to offers :congratulating:Apologising and forgiving:Complaining:Talking about likes and dislikes self introduction:Mock interviews(Group 1)
	2	**Unit1:-** Homecoming(R.N.Tagore)	**2**	**Fundamentals of Communiacation:-** Situational conversation:offering responding to offers :congratulating:Apologising and forgiving:Complaining:Talking about likes and dislikes self introduction:Mock interviews (Group 2)
8th	**1**	Life sketch of Sir Mokshagundam Visvesvarayya	**1**	**Grammar and usage:-** Written and oral drills will be undertaken in the class to facitilate holistic linguistic competency among learners (Group-1)
	2	Revision of above chapters	**2**	**Grammar and usage:-** Written and oral drills will be undertaken in the class to facitilate holistic linguistic competency among learners (Group-1)
9th	**1**	**Unit2:-**Barriers to communications	**1**	**Grammar and usage:-** Exercise on the prescribed grammar topics (Group-1)
	2	Speaking skills :Significance and essentials of spoken communication ,Listening Skills: Significane and essentials of listening	**2**	**Grammar and usage:-** Exercise on the prescribed grammar topics (Group-1)
10th	**1**	Revision of above chapters	**1**	**Writing Skills:-** Students should be given frequent practice in the groups so as to inculcate team-spirit and collaborative learning(Group-1)
	2	**Unit3:-**Verbs(Main and Auxiliary),Tenses	**2**	**Writing Skills:-** Students should be given frequent practice in the groups so as to inculcate team-spirit and collaborative learning(Group-2)

11th	**1**	Second Sessional Test(Tentative)	**1**	Second Sessional Test(Tentative)
	2	Second Sessional Test(Tentative)	**2**	Second Sessional Test(Tentative)
12th	**1**	Verbs(Main and Auxiliary),Tenses	**1**	**Writing Skills:-** Group exercises on writing paragraphs on given topics (Group-1)
	2	Revision of above topics	**2**	**Writing Skills:-** Group exercises on writing paragraphs on given topics (Group-2)
13th	**1**	**Unit4:-** Frequently used Abrevations used in letter writing,Paragraph writing	**1**	**Writing Skills:-** Opening an e-mail account receiving and sending e-mails (Group-1)
	2	Revision of above topics	**2**	**Writing Skills:-** Opening an e-mail account receiving and sending e-mails (Group-2)
14th	**1**	**Unit1:-**Life sketch of Dr Abdul Kalam , Narayan Murthy's speech at LBSNA,Dehradun	**1**	Revision and copy checking
	2	Revision of above topics	**2**	Revision and copy checking
15th	**1**	Third Sessional Test(Tentative)	**1**	Third Sessional Test(Tentative)
	2	Third Sessional Test(Tentative)	**2**	Third Sessional Test(Tentative)
16th	**1**	Revision	**1**	**Viva-voce**
	2	Revision	**2**	**Viva-voce**

Lesson Plan (Ist Semester)

Physics- 1

Week	Theory		Practical	
	Lecture Day	Topic(Including Assignments)	Practical Day	Topic
Ist	1	**Unit1:- Unit and Dimensions** Definition of Physics, Physical quantities: Fundamental and Derived	1	1) Familiarization of measuring instruments and their parts (e.g., Vernier Caliper, screw gauge spherometer ,travelling microscope etc.)(Group-1)
	2	Units: Fundamental and Derived, system of units: CGS,FPS,MKS,SI	2	1) Familiarization of measuring instruments and their parts (e.g.,Vernier Caliper ,screw gauge spherometer ,travelling microscope etc.)(Group-2)
2nd	1	Dimensions, dimensional formulae and SI units of physical quantities:Distance,displacement,area,volume,density,velocity,acceleration,linear momentum, force, impulse, work, power, energy, pressure, surface tension, stress, strain	1	2)To find diameter of solid cylinder using a vernier caliper(Group-1)
	2	Dimensional equation, principle of Homogeneity of dimensional equation. Application of dimensional analysis	2	2)To find diameter of solid cylinder using a vernier caliper(Group-2)
3rd	1	Checking of correctness of physical equation, conversion of system of units(Force ,work, acceleration**)**	1	3) To find internal diameter and depth of a beaker using a vernier caliper and hence find its volume(Group-1)
	2	**UNIT2:- Force and Motion** Scalar and vector quantities: Definition and examples ,representation of vector, types of vector(unit vector, position vector, cointial vector, collinear vector, coplanar vector)	2	3) To find internal diameter and depth of a beaker using a vernier caliper and hence find its volume(Group-2)
4th	1	Vector Algebra: Addition of vector, Triangle and parallelogram law(statement and formula only)	1	4) To find the diameter of a wire using a screw gauge.(Group-1)
	2	Scalar and Vector product(statement and formula only), Force and its units, Resolution of force(statement and formula only)	2	4) To find the diameter of a wire using a screw gauge.(Group-1)
5th	1	Newton’s law of Motion(statement and examples)	1	Revision and Viva(Group-1)

	2	Linear momentum, Law of conservation of linear momentum(statement and example),Impulse Revision of syllabus	**2**	Revision and Viva(Group-2)
6th	**1**	First Sessional Test(Tentative)	**1**	First Sessional Test(Tentative)
	2	First Sessional Test(Tentative	**2**	First Sessional Test(Tentative
7th	**1**	Circular Motion: Definition of Angular Displacement, Angular velocity, Angular acceleration ,Frequency, Time period, Relation between linear and angular velocity	**1**	5) To find the thickness of a paper using screw gauge(Group-1)
	2	Centripetal and centrifugal force(Definition and formula only), Application of centripetal force in banking of road	**2**	5) To find the thickness of a paper using screw gauge(Group-2)
8th	**1**	Rotational Motion :Definition with example, Definition of Torque angular momentum, Moment of inertia and its physical significance	**1**	6) To determine the thickness of a glass strip using a spherometer (Group-1)
	2	**Unit3:- Work, Power and Energy** Work:definition,symbol,formula and SI unit ,Types of work(zero work,positive work and negative work)with example	**2**	6) To determine the thickness of a glass strip using a spherometer (Group-2)
9th	**1**	Friction: Definition and its simple daily life applications , Power: Definition formula and units, Energy: definition and its SI units, Example of transformation of energy.	**1**	7) To determine the radius of curvature of a given spherical surface by a spherometer (Group-1)
	2	Kinetic Energy: Definition example formula and its derivation, Potential Energy: Definition example formula and its derivation	**2**	7) To determine the radius of curvature of a given spherical surface by a spherometer(Group-2)
10th	**1**	Law of conservation of Mechanical energy for freely falling body(with derivation),simple numerical problems based on formula of power and energy	**1**	8) To verify parallelogram law of force.(Group-1)
	2	Revision of above topics	**2**	8) To verify parallelogram law of force.(Group-2)
11th	**1**	Second Sessional Tests(Tentative)	**1**	Second Sessional Tests(Tentative)
	2	Second Sessional Tests(Tentative)	**2**	Second Sessional Tests(Tentative)
12th	**1**	**Unit4:- Properties of Matter** Elasticity and Plasticity – definition ,deforming force, restoring force ,example of elastic and plastic body, Definition of stress and strain ,Hook's law ,Modules of elasticity	**1**	9) To determine the atmospheric pressure at a place using Fortin's Barometer(Group-1)
	2	Pressure- Definition, atmospheric pressure, gauge pressure, absolute pressure, Pascal's law ,Surface Tension- Definition, SI unit	**2**	9) To determine the atmospheric pressure at a place using

		applications of surface tension, effect of temperature on surface tension		Fortin's Barometer(Group-2)
13th	**1**	Viscosity: Definition, unit, examples, effect of temperature on viscosity	**1**	10) To determine force constant of a spring using Hook's Law(Group-1)
	2	**Unit5: Heat and Temperature** Definition of Heat and Temperature (on the basis of Kinetic theory),Difference between Heat and Temperature	**2**	10) To determine force constant of a spring using Hook's Law(Group-2)
14th	**1**	Principle and working of Mercury Thermometer, Modes of Transfer of heat : conduction, convection and Radiation with examples.	**1**	11) Measuring Room temperature with the help of a Thermometer and its conversion in different scales(Group-1)
	2	Properties of Heat Radiations , Different scales of Temperature and their relationship	**2**	11) Measuring Room temperature with the help of a Thermometer and its conversion in different scales(Group-2)
15th	**1**	Third Sessional Test(Tentative)	**1**	Third Sessional Test(Tentative)
	2	Third Sessional Test(Tentative)	**2**	Third Sessional Test(Tentative)
16th	**1**	Revision of syllabus	**1**	Revision and Viva voce(Group-1)
	2	Revision of syllabus	**2**	Revision and Viva voce(Group-1)

Lesson Plan (Ist & IInd Semester)

Chemistry

Week	Lecture Day	Theory	Practical	
		Topic(Including Assignments)	Practical Day	Topic
1st	1st	**Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr's model of atom (qualitative treatment only),	1st	1.)To prepare standard solution of oxalic acid.(Group-1)
	2nd	Dual character of matter: derivation of de-Broglie's equation, Heisenberg's Principle of Uncertainty,		
	3rd	Modern concept of atomic structure: definition of orbitals , shapes of s, p and d- orbitals,	2nd	1)To prepare standard solution of oxalic acid.(Group-2)
2nd	4th	Quantum numbers and their Significance.	1st	2)To dilute the given KMnO4 solution(Group-1)
	5th	Electronic configuration: Aufbau and Pauli's exclusion principles		
	6th	Hund's rule, electronic configuration of elements up to atomic number 30.	2nd	2)To dilute the given KMnO4 solution(Group-2)
3rd	7th	Modern Periodic law and Periodic table	1st	3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution.(Group-1)
	8th	Classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids		
	9th	Chemical bonding: cause of bonding	2nd	3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution.(Group-2)
4th	10th	Ionic bond, covalent bond, and metallic bond (electron sea or gas model)	1st	Revision/viva
	11th	Physical properties of ionic, covalent and metallic substances.		
	12th	**Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact resistance and their uses.	2nd	Revision/viva
5th	13th	Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using a blast furnace	1st	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution(Group-1)
	14th	Commercial varieties of iron. Definition,necessity of making alloys		
	15th	Composition, properties and uses of duralumin and steel. Heat treatment of steel-normalizing, annealing, quenching, tempering	2nd	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution(Group-2)
6th	16th	First Sessional Test(Tentative)	1st	First Sessional Test(Tentative)
	17th	First Sessional Test(Tentative)		First Sessional Test(Tentative)

	18th	First Sessional Test(Tentative	2nd	First Sessional Test(Tentative)
7th	19th	**Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v),	1st	5)To determine the total hardness of given water sample by EDTA method(Group-1)
	20th	Normality, molarity and molality and ppm.		
	21th	Simple problems on solution preparation.	2nd	5)To determine the total hardness of given water sample by EDTA method(Group-2)
8th	22th	Arrhenius concept of acids and bases, strong and weak acids and bases	1st	6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water Gravimetrically(Group-1)
	23th	pH value of a solution and its significance		
	24th	pH scale. Simple numerical problems on pH of acids and bases.	2nd	6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water Gravimetrically(Group-2)
9th	25th	Hard and soft water, causes of hardness of water, types of hardness – temporary and permanent hardness	1st	Revision/viva(Group-1)
	26th	Expression of hardness of water, ppm unit of hardness disadvantages of hard water;		
	27th	Removal of hardness: removal of temporary hardness by boiling and Clark's method; removal of permanent hardness of water by Ion-Exchange method	2nd	Revision/viva(Group-2)
10th	28th	Boiler problems caused by hard water: scale and sludge formation, priming and foaming, caustic embrittlement	1st	7)To determine the pH of different solutions using a digital pH meter.(Group-1)
	29th	Water sterilization by chlorine, UV radiation and RO		
	30th	**Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific value, characteristics of an ideal fuel	2nd	7)To determine the pH of different solutions using a digital pH meter.(Group-2)
11th	31st	Second Sessional Test (Tentative)	1st	Second Sessional Test (Tentative)
	32nd	Second Sessional Test (Tentative)		
	33rd	Second Sessional Test (Tentative)	2nd	Second Sessional Test (Tentative)
12th	34th	Petroleum: composition and refining of petroleum; gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG	1st	8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1)
	35th	Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel		
	36th	Lubricants- Functions and qualities of a good lubricant,	2nd	8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2)
13th	37th	Classification of lubricants with examples; lubrication mechanism	1st	9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1)
	38th	Physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point		
	39th	**Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation polymerization	2nd	9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2)
14th	40th	Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite; definition of plastic	1st	10)To prepare a sample of Phenol-formaldehyde resin

	41th	Thermoplastics and thermosetting polymers; natural rubber and neoprene, other synthetic rubbers (names only)		(Bakelite)/Nylon-66 in the lab(Group-1)
	42nd	Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of prevention of corrosion	2nd	10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2)
15th	43th	Third Sessional Test(Tentative)	1st	Third Sessional Test(Tentative)
	44th	Third Sessional Test(Tentative)		
	45th	Third Sessional Test(Tentative)	2nd	Third Sessional Test(Tentative)
16th	46th	Hot dipping, metal cladding, cementation, quenching, cathodic protection methods	1st	Revision/Viva(Group-1)
	47th	Introduction and application of nanotechnology: nano-materials and their classification, applications of nanotechnology in various engineering applications		
	48th	Revision	2nd	Revision/Viva(Group-2)

Lesson Plan (Ist & IInd Semester)

Environmental Studies and Disaster Management

Week	Theory/Practical	
	Lecture Day	**Topic Including(assignment/Test)**
Ist	**1**	**Unit1:- Introduction** Basics of Ecology,Eco system Concept and sustainable development
	2	Sources ,advantages,disadvantages of renewable and non-renewable energy
IInd	**1**	Rain Water Harvesting
	2	Deforestation – its effects and control measures
IIIrd	**1**	**Unit2:- Air and Noise Pollution** Air Pollution: Source of Air Pollution
	2	Effect of Air Pollution on Human Health, Economy, Air Pollution control Methods
IVth	**1**	Noise Pollution: Sources of Noise Pollution, unit of noise ,Effect of Noise Pollution, Acceptable Noise Level, different Methods of minimizing Noise Pollution
	2	Revision of Above topics
Vth	**1**	**Unit3:- Water and Soil Pollution** Water Pollution: Impurities in water, Cause of water Pollution
	2	Sources of water Pollution. Effect of water pollution on human health
VIth	**1**	First Sessional Test(Tentative)
	2	First Sessional Test(Tentative)
VIIth	**1**	Concept of DO ,BOD, COD
	2	Prevention of water Pollution- water treatment processes
VIIIth	**1**	Sewage treatment ,Water quality standard
	2	Soil Pollution: Sources of soil Pollution
IXth	**1**	Effect and control of soil pollution
	2	Type of solid waste- House hold , Industrial , Agricultural , Bio-Medical ,Disposal of Solid waste.
Xth	**1**	Solid waste management E-waste ,E-waste management
	2	**Unit4:- Impact of Energy Usage on Environment** Global Warming ,Green House Effect , Depletion of Ozone Layer
XIth	**1**	Second Sessional Tests(Tentative)
	2	Second Sessional Tests(Tentative)
XIIth	**1**	Acid Rain .Eco Friendly Material, Recycling of Material, Concept of Green Building
	2	Concept of Carbon credit and Carbon Foot Print
XIIIth	**1**	**Unit5:- Disaster Management A** Different type of Disaster ,Natural Disasters such as Flood ,Cyclone ,Earth Quake and Landslides etc.
	2	Manmade Disasters such as Fire ,Industrial Pollution ,Nuclear Disasters , biological Disasters.
XIVth	**1**	Accidents(Air , Sea Rain and Road) , Structural Failures (Building and Bridges) , War and Terrorism
	2	B Disaster Preparedness Disaster Preparedness plan : Prediction ,Early warnings and safety measures of Disaster Psychological Response and Management (Trauma, Stress, Rumour and Panic)
XVth	**1**	Third Sessional Test(Tentative)
	2	Third Sessional Test(Tentative)
XVIth	**1**	Revision of above Syllabus
	2	Revision of above Syllabus