

Lesson Plan

Mathematics

Week	Theory/Practical	
	Lecture Day	Topic Including(assignment/Test)
Ist	1	Introduction to syllabus and evaluation scheme Unit1:- Differential Calculus 1.1 Definition of function: Concept of limits (Introduction only) and problems related to four standard limits only.
	2	1.1 Definition of function: Concept of limits (Introduction only) and problems related to four standard limits only.
	3	1.1 Definition of function: Concept of limits (Introduction only) and problems related to four standard limits only.
	4	1.2 Differentiation of x^n , $\sin x$, $\cos x$, e^x by first principle.
IIInd	1	1.3 Differentiation of sum, product and quotient of functions.
	2	1.3 Differentiation of sum, product and quotient of functions.
	3	1.3 Differentiation of sum, product and quotient of functions.
	4	Unit 2 Differential Calculus and Its Application 2.1 Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2 nd order)
IIIrd	1	2.1 Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2 nd order)
	2	2.1 Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2 nd order)
	3	2.1 Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2 nd order)
	4	2.2 Application of differential calculus in: (a) Rate measure (b) Maxima and minima
IVth	1	2.2 Application of differential calculus in: (a) Rate measure (b) Maxima and minima
	2	2.2 Application of differential calculus in: (a) Rate measure (b) Maxima and minima
	3	Revision
	4	Unit 3 Integral Calculus 3.1 Integration as inverse operation of differentiation with simple examples.
Vth	1	First Sessional Test(Tentative)
	2	First Sessional Test(Tentative)
	3	First Sessional Test(Tentative)
	4	3.1 Integration as inverse operation of differentiation with simple examples.
VIth	1	3.1 Integration as inverse operation of differentiation with simple examples.
	2	3.2 Simple standard integrals and related problems, Integration by Substitution method and integration by parts.
	3	3.2 Simple standard integrals and related problems, Integration by Substitution method and integration by parts.
	4	3.3 Evaluation of definite integrals with given limits. Evaluation of $\int_0^{\pi/2} \sin^n x \cdot dx$, $\int_0^{\pi/2} \cos^n x \cdot dx$, $\int_0^{\pi/2} \sin^m x \cos^n \cdot dx$, Using formula without proof (m and n being positive integers only) using pre-existing mathematical models.
VIIth	1	3.3 Evaluation of definite integrals with given limits. Evaluation of $\int_0^{\pi/2} \sin^n x \cdot dx$, $\int_0^{\pi/2} \cos^n x \cdot dx$, $\int_0^{\pi/2} \sin^m x \cos^n \cdot dx$, Using formula without proof (m and n being positive integers only) using pre-existing mathematical models.
	2	Unit4:- Application of Integration, Numerical Integration and Differential Equations 4.1 Application of integration for evaluation of area under a curve and axes (Simple problems).
	3	4.1 Application of integration for evaluation of area under a curve and axes (Simple problems).
	4	4.2 Numerical of integration by Trapezoidal rule and Simpson's 1/3 rd Rule using pre-existing mathematical models.
VIIIth	1	4.2 Numerical of integration by Trapezoidal rule and Simpson's 1/3 rd Rule using pre
	2	Deferential, Equations 4.3 Definition, order, degree, Type of differential Equation, Linearity, Formulation

		of ordinary differential equation (up to 1 st order), solution of ODE (Ist order) by variable separation method.
	3	4.3 Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1 st order), solution of ODE (Ist order) by variable separation method.
	4	Revision
IXth	1	Second Sessional Test(Tentative)
	2	Second Sessional Test(Tentative)
	3	Second Sessional Test(Tentative).,
	4	4.3 Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1 st order), solution of ODE (Ist order) by variable separation method.
Xth	1	Unit 5 Statistics and Software:- Statistics 5.1 Measures of Central Tendency: Mean, Median, Mode
	2	5.1 Measures of Central Tendency: Mean, Median, Mode
	3	5.2 Measures of Dispersion: Mean deviation, Standard deviation
	4	5.2 Measures of Dispersion: Mean deviation, Standard Deviation
XIth	1	5.2 Measures of Dispersion: Mean deviation, Standard Deviation
	2	Software 5.3 Sci lab Software- Theoretical Introduction.
	3	5.3 Sci lab Software- Theoretical Introduction.
	4	5.4 Basic difference between MATLAB and Sci Lab Software,
XIIth	1	5.4 Basic difference between MATLAB and Sci Lab Software,
	2	5.5 Calculations with MATLAB or Sci Lab – (a) Representation of matrix (2*2 order), (b) Additional , Subtraction of matrices (2*2 order) in MATLAB or Sci Lab
	3	5.5 Calculations with MATLAB or Sci Lab – (a) Representation of matrix (2*2 order), (b) Additional , Subtraction of matrices (2*2 order) in MATLAB or Sci Lab
	4	Revision
XIIIth	1	Third Sessional Test (Tentative).
	2	Third Sessional Test (Tentative).
	3	Third Sessional Test (Tentative).
	4	Revision
XIVth	1	Revision
	2	Revision
	3	Revision
	4	Revision
XVth	1	Revision
	2	Revision
	3	Revision
	4	Revision

Lesson Plan

English

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	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 Communication:- Situational conversation: offering responding to offers :congratulating :Apologizing and forgiving :Complaining :Talking about likes and dislikes self introduction :Mock interviews(Group 1)
	2	Unit1:-	2	Fundamentals of

		Homecoming(R.N.Tagore)		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

Physics (2nd Semester)

Week	Theory		Practical	
	Lecture Day	Topic(Including Assignments)	Practical Day	Topic
1st	1	Unit1:- Wave Motion and its Applications 1.1 Waves: Definition ,types(mechanical and electromagnetic wave) 1.2 Wave Motion -transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length	1	1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1)
	2	1.3 Simple Harmonic Motion(SHM): Definitions , Examples 1.4 Cantilever : Definitions , Formula of Time Period(Without Derivation)	2	1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2)
2nd	1	1.5 Free, forced and resonant vibrations with examples. 1.6 Sound waves: Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo	1	2) To find the time period of a simple pendulum. (Group-1)
	2	Unit2:- Optics:- 2.1 Reflection and refraction of light with laws, refractive index 2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems	2	2) To find the time period of a simple pendulum. (Group-2)
3rd	1	2.3 Total internal reflection and its applications, critical angle and conditions for total internal reflection	1	3) To study variation of time period of simple pendulum with change in length of pendulum.(Group-1)
	2	2.4 Superposition of waves (concept only), definition of interference, diffraction and polarization of waves	2	3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2)
4th	1	2.5 Introduction of Microscope, Telescope and their applications	1	4) To determine and verify the time period of Cantilever (Group-1)
	2	UNIT3:- Electrostatics and Electricity 3.1 Electric charge, unit of charge, conservation of charge 3.2 Coulomb's law of electrostatics Assignment 1	2	4) To determine and verify the time period of Cantilever.(Group-2)
5th	1	First Sessional Test(Tentative)	1	Revision and Viva-voce (Group-1)
	2	First Sessional Test(Tentative)	2	Revision and Viva-voce (Group-2)
6th	1	3.3 Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge 3.4 Definition of electric flux, Gauss law (statement and formula)	1	5) To verify Ohm's laws by plotting a graph between voltage and current (Group-1)
	2	3.5 Capacitor and capacitance (with formula and unit) 3.6 Electric current and its SI Unit, direct and alternating current	2	5) To verify Ohm's laws by plotting a graph between voltage and current (Group-2)
7th	1	3.7 Resistance, conductance (definition and unit) 3.8 Series and parallel combination of resistances	1	6) To study colour coding scheme of resistance. (Group-1)

	2	3.9 Ohm's law (Statement and formula) Assignment 2	2	6) To study colour coding scheme of resistance. (Group-2)
8th	1	Unit 4 Classification of Materials and their Properties 4.1 Definition of energy level, energy bands 4.2 Types of materials (conductor, semiconductors (introduction only)	1	7) To verify laws of resistances in series combination (Group-1)
	2	4.3 Introduction to magnetism, type of magnetic materials: Diamagnetic, paramagnetic and ferromagnetic materials with examples 4.4 Magnetic field, magnetic lines of force, magnetic flux 4.5 Electromagnetic induction (definition)	2	7) To verify laws of resistances in series combination (Group-2)
9th	1	Second Sessional Test(Tentative)	1	Revision and Viva-voce (Group-1)
	2	Second Sessional Test(Tentative)	2	Revision and Viva-voce (Group-2)
10th	1	Unit5 Modern Physics 5.1 Laser: Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion	1	8) To verify laws of resistance in parallel combination .(Group-1)
	2	5.2 Engineering and medical applications of laser	2	8) To verify laws of resistance in parallel combination.(Group-2)
11th	1	5.3 Fibre optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors.	1	9) To find resistance of galvanometer by half deflection method (Group-1)
	2	5.4 Nanotechnology: Introduction, definition of nanomaterial's with examples, properties at nano scale, applications of nanotechnology (brief)	2	9) To find resistance of galvanometer by half deflection method (Group-2)
12th	1	Assignment 3	1	10) To verify laws of reflection of light using mirror (Group-1)
	2	Revision of above topics	2	10) To verify laws of reflection of light using mirror (Group-2)
13th	1	Third Sessional Test(Tentative)	1	Revision and Viva-voce (Group-1)
	2	Third Sessional Test(Tentative)	2	Revision and Viva-voce (Group-2)
14th	1	Revision of above topics	1	11) To verify laws of refraction using glass slab.(Group-1)
	2	Revision of above topics	2	11) To verify laws of refraction using glass slab.(Group-2)
15th	1	Revision of above topics	1	12) To find the focal length of a concave lens, using a convex lens.(Group-1)
	2	Revision of above topics	2	12) To find the focal length of a concave lens, using a convex lens.(Group-2)

Lesson Plan Chemistry

Week	Lecture Day	Theory	Practical
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		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)
	35 th	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 (Bakelite)/Nylon-66 in the lab(Group-1)
	41th	Thermoplastics and thermosetting polymers; natural rubber and neoprene, other synthetic rubbers (names only)		
	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

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
IIInd	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

1.1 ENGLISH & COMMUNICATION SKILLS –I
(Civil/Electrical/Computer/Mechanical/Electronics/I&C)

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2 2

RATIONALE

Language as the most commonly used medium of self-expression remains indispensable in all spheres of human life –personal, social and professional. This course is intended to break fresh ground in teaching of Communicative English as per the requirements of National Skill Quality Framework. This course is designed to help students to acquire the concept of communication and develop an ability or skills to use them effectively to communicate with the individuals and community.

COURSE OUTCOMES

After undergoing this course, the students will be able to:

CO1: Identify the nuances of Communication, both Oral and Written.

CO2: Acquire knowledge of the meaning of communication, communication process and Speaking skills.

CO3: Acquire enhanced vocabulary and in-depth understanding of Grammatical Structures and their usage in the communication.

CO4: Communicate effectively with an increased confidence to read, write and speak in English language fluently.

DETAILED CONTENTS

UNIT I

Reading

1.1 Techniques of reading: Skimming and Scanning

1.2 Extensive and Intensive Reading: Textual Study

1.3 Homecoming – R.N. Tagore

1.4 Life Sketch of Sir Mokshagundam Visvesvarayya

1.5 Life Sketch of Dr. Abdul Kalam

1.6 Narayan Murthy's speech at LBSNA, Dehradun

UNIT II

Fundamentals of Communication

2.1 Concept and Process of Communication,

2.2 Types of Communication (Verbal Communication)

2.3 Barriers to Communication

2.4 Speaking Skill: Significance and essentials of Spoken Communication

2.5 Listening Skill: Significance and essentials of Listening

UNIT III

Grammar and Usage

3.1 Nouns

3.2 Pronouns

3.3 Articles

3.4 Verbs(Main and Auxiliary)

3.5 Tenses

UNIT IV

Writing Skills

4.1 Significance, essentials and effectiveness of Written Communication

4.2 Notice Writing

4.3 Official Letters and E-mails.

4.4 Frequently-used Abbreviations used in Letter-Writing

4.5 Paragraph Writing

4.6 Netiquettes

PRACTICAL EXERCISES

1 Reading

Reading Practice of lessons in the Lab Activity classes.

- i. Comprehension exercises of unseen passages along with the lessons prescribed.
- ii. Vocabulary enrichment and grammar exercises based on the selected readings.
- iii. Reading aloud Newspaper headlines and important articles.

2 Fundamentals of Communication

- i. Introducing oneself, others and leave-taking (talking about yourself)
- ii. Just a minute (JAM) sessions: Speaking extempore for one minute on given topics
- iii. Situational Conversation: Offering-Responding to offers; Congratulating; Apologising and Forgiving; Complaining; Talking about likes and dislikes, Self-introduction Mock Interviews.

3 Grammar and Usage

- i. Written and Oral Drills will be undertaken in the class to facilitate holistic linguistic competency among learners.
- ii. Exercises on the prescribed grammar topics.

4 Writing Skills

- i. Students should be given Written Practice in groups so as to inculcate team-spirit and collaborative learning
- ii. Group exercises on writing paragraphs on given topics.
- iii. Opening an e-mail account, receiving and sending emails

RECOMMENDED BOOKS

1. Alvinder Dhillon and Parmod Kumar Singla, "Text Book of English and Communication Skills Vol – 2", M/S Abhishek Publications, Chandigarh.
2. V Sasikumar & PV Dhamija, "Spoken English", Tata MC Graw Hills, New Delhi, Second Edition.
3. JK Gangal, "A Practical Course in Spoken English", PHI Learning Pvt. Ltd., New Delhi.
4. NK Aggarwal and FT Wood, "English Grammar, Composition and Usage", Macmillan Publishers India Ltd., New Delhi.

5. RC Sharma and Krishna Mohan, “Business Correspondence & Report writing”, Tata MC Graw Hills, New Delhi, Fourth Edition.
6. Kavita Tyagi & Padma Misra, “Professional Communication”, PHI Learning Pvt. Ltd., New Delhi.
7. Nira Konar, “Communication Skills for professionals”, PHI Learning Pvt. Ltd., New Delhi
8. Krishna Mohan & Meera Banerji, “Developing Communication Skills”, Macmillan Publishers India Ltd., New Delhi, Second Edition
9. M. Ashraf Rizwi, “Effective Technical Communication”, Tata MC Graw Hills, New Delhi.
10. Andrea J Rutherford, “Basic Communication Skills for Technology”, Pearson Education, New Delhi.

INSTRUCTIONAL STRATEGY

This is practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required communication skills in the students. This subject contains four units of equal weight age.

1.2 APPLIED MATHEMATICS – I

(Civil/Electrical/Computer/Mechanical/Electronics/I&C)

L P

4 -

RATIONALE

Contents of this course provide fundamental base for understanding engineering problems and their solution algorithms. Contents of this course will enable students to use basic tools like logarithm, binomial theorem, matrices, t-ratios and co-ordinates for solving complex engineering problems with exact solutions in a way which involve less computational task. By understanding the logarithm, they will be able to make long calculations in short time and it is also a pre-requisite for understanding Calculus.

COURSE OUTCOMES

After undergoing this course, the students will be able to:

CO1: Understand the geometric shapes used in engineering problems by Co-ordinate Geometry and Trigonometry.

CO2: Formulate engineering problems into mathematical formats with the use matrices, co-ordinate geometry and trigonometry

CO3: Calculate the approximate value of roots of certain expressions in engineering problems by application of binomial theorem.

CO4: Explore the idea of location, graph, and linear relationships between two variables.

CO5: Learn about basic fundamentals about MATLAB/ SciLab and mathematical calculation with MATLAB/ SciLab software.

DETAILED CONTENTS

UNIT I

Algebra

1.1 Complex Numbers: definition of complex number, real and imaginary parts of a complex number, Polar and Cartesian Form and their inter conversion, Conjugate of a complex number, modulus and amplitude, addition subtraction, multiplication and division of complex numb

1.2 Logarithms and its basic properties

UNIT II

Binomial Theorem, Determinants and Matrices

2.1 Meaning of ${}^n P_r$ & ${}^n C_r$ (mathematical expression). Binomial theorem (without proof) for positive integral index (expansion and general form); binomial theorem for any index (expansion up to 3 terms - without proof), first binomial approximation with application to engineering problems.

2.2 Determinants and Matrices – Evaluation of determinants (upto 2nd order), solution of equations (upto 2 unknowns) by Cramer's rule, definition of Matrices and its types, addition, subtraction and multiplication of matrices (upto 2nd order).

UNIT III

Trigonometry

3.1 Concept of angle, measurement of angle in degrees, grades, radians and their conversions.

3.2 T-Ratios of Allied angles (without proof), Sum, Difference formulae and their applications (without proof). Product formulae (Transformation of product to sum, difference and vice versa

3.3 Applications of Trigonometric terms in engineering problems such as to find an angle of elevation, height, distance etc.

UNIT-IV

Co-ordinate Geometry

4.1 Cartesian and Polar co-ordinates (two dimensional), Distance between two points, mid-point, centroid of vertices of a triangle.

- 4.2 Slope of a line, equation of straight line in various standard forms (without proof); (slope intercept form, intercept form, one-point form, two-point form, symmetric form, normal form, general form), intersection of two straight lines, concurrency of lines, angle between straight lines, parallel and perpendicular lines, perpendicular distance formula, conversion of general form of equation to the various forms.

UNIT V

Geometry of Circle and Software

Circle

- 5.1 General equation of a circle and its characteristics. To find the equation of a circle, given:
- Centre and radius
 - Three points lying on it
 - Coordinates of end points of a diameter

Software

- 5.2 MATLAB Or SciLab software – Theoretical Introduction, MATLAB or Scilab as Simple Calculator (Addition and subtraction of values – Trigonometric and Inverse Trigonometric functions) – General Practice

RECOMMENDED BOOKS

1. R. D. Sharma, “Applied Mathematics – I & II for Diploma Courses”, Dhanpat Rai Publications.
2. “Mathematics for Class XI”, NCERT Publication, New Delhi.
3. “Mathematics for Class XII”, NCERT Publication, New Delhi.
4. H. K. Dass, “Applied Mathematics for Polytechnics”, CBS Publishers & Distributors.
5. A Ganesh and G Balasubramanian, “Textbook of Engineering Mathematics – I”, CBS Publisher, New Delhi.
6. A Ganesh and G Balasubramanian, “Textbook of Engineering Mathematics – II”, CBS Publisher, New Delhi.
7. G. B. Thomas, R. L. Finney, “Calculus and Analytic Geometry”, Addison Wesley, Ninth Edition.
8. B S Grewal, “Elementary Engineering Mathematics”, Khanna Publishers, Delhi, Thirty-fifth edition.
9. R.K. Jain and S.R.K. Iyengar, “Advanced Engineering Mathematics”, Narosa Publishing House, New Delhi, Second Edition, 2003.
10. SS Sabharwal & Dr Sunita Jain, “Applied Mathematics Vol. I & II”, Eagle Parkashan, Jalandhar.
11. S Kohli, “Engineering Mathematics Vol. I & II”, IPH, Jalandhar.

12. Reena Garg & Chandrika Prasad, “Advanced Engineering Mathematics”, Khanna Publishing House, New Delhi
13. R. Pratap, “Getting Started with MATLAB 7”, Oxford University Press, Seventh Edition.
14. E-books/e-tools/relevant software to be used as recommended by

AICTE/HSBTE/NITTTR.

SUGGESTED WEBSITES

1. <http://swayam.gov.in>

2. <https://www.scilab.org>

This is theoretical subject and contains five units of equal weightage. Basic elements of algebra, trigonometry and co-ordinate geometry can be taught in the light of their applications in the field of engineering and technology. By laying more emphasis on applied part, teacher can also help in providing a good continuing education base to the students. Students need to be taught the skills needed to use software tools built by experts through multiple problem solving based on the topics related to Algebra, Trigonometry and Coordinate Geometry that the industry requires. Examples to be used should be related to engineering. Useful software MATLAB or open source software SciLab can be taught theoretically by books/online literatures and basic operations can be shown practically with practical software laboratory or small mobile apps of these software or authentic Trial version of MATLAB/ SciLab software. Students should be able to relate to the actual use of these examples and the way mathematical calculations will help them in doing their job.

1.3 APPLIED PHYSICS-I

(Civil/Electrical/Computer/Mechanical/Electronics/I&C)

LP

22

RATIONALE

Applied physics includes the study of a large number of diverse topics all related to things that go on in the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which objects will behave. Concrete use of physical principles and analysis in various technical fields are given prominence in the course content.

COURSE OUTCOMES

After completing this course, student should be able to:

CO1: Identify physical quantities, select their units and make measurements with accuracy.

CO2: Represent physical quantities as scalar and vector and identify type of motions, various forms of energy, their conversion and applications.

CO3: Elaborate scientific work, energy and power, forms of friction and solve problems related to them.

CO4: Comprehend properties of matter and effect of temperature on various matter and phenomenon.

CO5: Demonstrate the use of physical principles and analysis in various technical fields.

DETAILED CONTENTS

UNIT I

Unit and Dimensions

- 1.1 Definition of Physics, physical quantities- fundamental and derived
- 1.2 Units: fundamental and derived
- 1.3 System of units: CGS, FPS, MKS, SI
- 1.4 Dimension, 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)
- 1.5 Dimensional equations, principle of homogeneity of dimensional equation
- 1.6 Application of dimensional analysis: checking the correctness of physical equation, conversion of system of unit (force, work, acceleration)

UNIT II

Force and Motion

- 2.1 Scalar and vector quantities– definition and examples, representation of vector, types of vector (unit vector, position vector, co-initial vector, collinear vector, coplanar vector)
- 2.2 Vector algebra- addition of vectors, Triangle & Parallelogram law (statement and formula only),
- 2.3 Scalar and vector product (statement and formula only)
- 2.4 Force and its units, resolution of force (statement and formula only)
- 2.5 Newton's laws of motion (statement and examples)
- 2.6 Linear momentum, Law of conservation of linear momentum (statement and examples), Impulse
- 2.7 Circular motion: definition of angular displacement, angular velocity, angular acceleration, frequency, time period; Relation between linear and angular velocity, centripetal and centrifugal forces (definition and formula only), application of centripetal force in banking of road
- 2.8 Rotational motion: definition with examples
- 2.9 Definition of torque, angular momentum, moment of inertia and its physical significance

UNIT III

Work, Power and Energy

- 3.1 Work- definition, symbol, formula and SI unit, types of work (zero work, positive work and negative work) with example
- 3.2 Friction– definition and its simple daily life applications
- 3.3 Power- definition, formula and units
- 3.4 Energy- definition and its SI unit, examples of transformation of energy.
- 3.5 Kinetic energy- definition, examples, formula and its derivation
- 3.6 Potential energy- definition, examples, formula and its derivation
- 3.7 Law of conservation of mechanical energy for freely falling bodies (with derivation)
- 3.8 Simple numerical problems based on formula of Power and Energy

UNIT IV

Properties of Matter

- 4.1 Elasticity and plasticity- definition, deforming force, restoring force, example of elastic and plastic body
- 4.2 Definition of stress and strain, Hooke's law, modulus of elasticity
- 4.3 Pressure- definition, atmospheric pressure, gauge pressure, absolute pressure, Pascal's law
- 4.4 Surface tension- definition, SI unit, applications of surface tension, effect of temperature on surface tension
- 4.5 Viscosity: definition, unit, examples, effect of temperature on viscosity

UNIT V

Heat and Temperature

- 5.1 Definition of heat and temperature (on the basis of kinetic theory)
- 5.2 Difference between heat and temperature
- 5.3 Principle and working of mercury thermometer
- 5.4 Modes of transfer of heat- conduction, convection and radiation with examples.
- 5.5 Properties of heat radiation
- 5.6 Different scales of temperature and their relationship

PRACTICAL EXERCISES

1. Familiarization of measurement instruments and their parts (for example – Vernier caliper, screw gauge, sphere meter, travelling microscope etc.), and taking a reading. (compulsory to all students)
2. To find diameter of solid cylinder using a Vernier caliper

3. To find internal diameter and depth of a beaker using a Vernier caliper and hence find its volume.
4. To find the diameter of wire using screw gauge
5. To find thickness of paper using screw gauge.
6. To determine the thickness of glass strip using a spherometer
7. To determine radius of curvature of a given spherical surface by a spherometer.
8. To verify parallelogram law of force
9. To determine the atmospheric pressure at a place using Fortin's Barometer
10. To determine force constant of spring using Hooke's law
11. Measuring room temperature with the help of thermometer and its conversion in different scale.

RECOMMENDED BOOKS

1. "Text Book of Physics for Class XI (Part-I, Part-II)", N.C.E.R.T., Delhi.
2. Dr.HH Lal, "Applied Physics, Vol.I and Vol.II", TTTI Publications, Tata McGraw Hill, Delhi.
3. AS Vasudeva, "Applied Physics – I", Modern Publishers, Jalandhar.
4. R A Banwait, "Applied Physics – I", Eagle Prakashan, Jalandhar.
5. E-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.
6. C. L. Arora, "Practical Physics", S Chand Publication.

SUGGESTED WEBSITES

1. <http://swayam.gov.in>
2. **The Physics Classroom**
3. <https://www.khanacademy.org/science/physics>

INSTRUCTIONAL STRATEGY

This is hands-on practice based subject and topics taught in the class should be practiced in the Lab regularly for development of required skills in the students. This subject contains five units of equal weightage. Teacher may use various teaching aids like models, charts, graphs and experimental kits etc. for imparting effective instructions in the subject. Students need to be exposed to use of different sets of units and conversion from one unit type to another. Software may be used to solve problems involving conversion of units. The teacher should explain about field applications before teaching the basics of mechanics, work, power and energy, rotational motion,

properties of matter etc. to develop proper understanding of the physical phenomenon. Use of demonstration can make the subject interesting and develop scientific temper in the students. Teachers should give examples of engineering/technology applications of various concepts and principles in each topic so that students are able to appreciate learning of these concepts and principles. In all contents, SI units should be followed. Working in different sets of units can be taught through relevant software.

1.4 APPLIED CHEMISTRY

(Civil)

LP

32

RATIONALE

The regular use of a variety of chemistry based materials and processes in diverse technical and engineering fields have repeatedly proven the importance of Applied Chemistry and its role in current and future technological advancements. Ever increasing use of chemical materials in the emerging engineering applications demands engineers and technocrats to acquire an in-depth knowledge of Applied Chemistry to be able to choose the best suited materials to meet their needs while maintaining the environment sustainability. An understanding of the principles of Applied Chemistry will develop scientific attitude in the budding engineers to understand the physical and chemical properties of the available materials for engineering applications as well as an ability to design new and effective materials.

COURSE OUTCOMES

After studying this course, students will be able to:

CO1: Classify the elements into metals, non-metals and metalloids.

CO2: Explain the extraction of metals from ores, their mechanical properties and modification of properties by alloy formation.

CO3: Classify fuels and lubricants and apply them in different engineering applications.

CO4: Identify the polymeric materials, assess their properties and design suitable polymeric materials for current and future applications.

CO5: Apply effective methods for corrosion prevention

DETAILED CONTENTS

UNIT 1

Atomic Structure, Periodic Table and Chemical Bonding.

- 1.1 Bohr's model of atom (qualitative treatment only), dual character of matter: derivation of de-Broglie's equation, Heisenberg's Principle of Uncertainty, modern concept of atomic structure: definition of orbitals, shapes of s, p and d-orbitals, quantum numbers and their significance. Electronic configuration: Aufbau and Pauli's exclusion principles and Hund's rule, electronic configuration of elements up to atomic number 30.
- 1.2 Modern Periodic law and Periodic table, classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids (periodicity in properties excluded).
- 1.3 Chemical bonding: cause of bonding, ionic bond, covalent bond, and metallic bond (electron sea or gas model), Physical properties of ionic, covalent and metallic substances.

UNIT II

Metals and Alloys

- 2.1 Metals: mechanical properties of metals such as conductivity, elasticity, strength and stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact resistance and their uses.
- 2.2 Definition of a mineral, ore, gangue, flux and slag. Metallurgy of iron from haematite using a blast furnace. Commercial varieties of iron.
- 2.3 Alloys: definition, necessity of making alloys, composition, properties and uses of duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering.

UNIT III

Water, Solutions, Acids and Bases

- 3.1 Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v), normality, molarity and molality and ppm. Simple problems on solution preparation.
- 3.2 Arrhenius concept of acids and bases, strong and weak acids and bases, pH value of a solution and its significance, pH scale. Simple numerical problems on pH of acids and bases.
- 3.4 Hard and soft water, causes of hardness of water, types of hardness – temporary and permanent hardness, expression of hardness of water, ppm unit of hardness; disadvantages of hard water; removal of hardness: removal of temporary hardness by boiling and Clark's method; removal of permanent hardness of water by Ion-Exchange method; boiler problems caused by hard water: scale and sludge formation, priming and foaming, caustic embrittlement; water sterilization by chlorine, UV radiation and RO.

UNIT IV

Fuels and Lubricants

4.1 Fuels: definition and classification of higher and lower calorific values, units of calorific value, characteristics of an ideal fuel. Petroleum: composition and refining of petroleum; gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG; relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel.

4.2 Lubricants- Functions and qualities of a good lubricant, classification of lubricants with examples; lubrication mechanism (brief idea only); physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point.

UNIT V

Polymers and Electrochemistry

5.1 Polymers and Plastics: definition of polymer, classification, addition and condensation polymerization; preparation properties and uses of polythene, PVC, Nylon-66, Bakelite; definition of plastic, thermoplastics and thermosetting polymers; natural rubber and neoprene, other synthetic rubbers (names only).

5.2 Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of prevention of corrosion—hot dipping, metal cladding, cementation, quenching, cathodic protection methods

5.3 Introduction and application of nanotechnology: nano-materials and their classification, applications of nanotechnology in various engineering applications (brief).

PRACTICAL EXERCISES

1. To prepare standard solution of oxalic acid.
2. To dilute the given KMnO_4 solution
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.
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.
5. To determine the total hardness of given water sample by EDTA method
6. To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water gravimetrically
7. To determine the pH of different solutions using a digital pH meter.
8. To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter.
9. To determine the viscosity of a lubricating oil using a Redwood viscometer
10. To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.

RECOMMENDED BOOKS

1. Textbook of Chemistry for class XI and XII (part I & II) NCERT, Delhi, 2017-18.

2. C.N. R. Rao, Understanding Chemistry, Universities Press (India) Pvt. Ltd, 2011.
3. Jain & Jain, Engineering Chemistry, Dhanpat Rai and Sons; New Delhi, 2015.
4. Dr. G. H. Hugar & Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II, NITTTR, Chandigarh, Publications, 2013-14.
5. Agnihotri, Rajesh, Chemistry for Engineers, Wiley India Pvt. Ltd, 2014.
6. Applied Chemistry by Usha Raju.

SUGGESTED WEBSITES

1. **www.chemguide.co.uk/atommenu.html (Atomic structure and chemical bonding)**
2. **www.visionlearning.com (Atomic structure and chemical bonding)**
3. **www.cheml.com (Atomic structure and chemical bonding)**
4. **<https://www.wastewaterelearning.com/elearning/> (Water treatment)**
5. **www.capital-refractories.com (Metals, Alloys, Cement, and Refractory Materials)**
6. **www.em-ea.org/guide%20books/book%202/2.1%20fuels%20and%20combustion.pdf (Fuel and combustion)**

INSTRUCTIONAL STRATEGY

Teachers may take help of various models and charts while imparting instructions to make the concept clear. More emphasis should be laid on discussing and explaining practical applications of various chemical process and reactions. In addition, students should be encouraged or motivated to study those processes in more details, which may find practical application in their future professional career. This subject contains five units of equal weightage.

1.5 ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT (Mechanical)

L P

2 -

RATIONALE

A diploma holder must have knowledge of different types of pollution caused due to industrial and construction activities so that he/she may help in balancing the ecosystem and controlling pollution by various control measures. The course is intended to provide a general concept in the dimensions of environmental pollution and disasters caused by nature beyond the human control as well as the disasters and environmental hazards induced by human activities with emphasis on disaster preparedness, response and recovery.

COURSE OUTCOMES

After undergoing the subject, the student will be able to:

CO1: Comprehend the importance of sustainable ecosystem.

CO2: Clarify interdisciplinary nature of environmental issues.

CO3: Describe corrective measures for the abatement of pollution.

CO4: Identify the role of non-conventional energy resources in environmental protection.

CO5: Recognize various types of disasters.

DETAILED CONTENTS

UNIT I

Introduction

- 1.1 Basics of ecology, eco system- concept, and sustainable development, Sources, advantages, disadvantages of renewable and nonrenewable energy.
- 1.2 Rain water harvesting
- 1.3 Deforestation – its effects & control measures

UNIT II

Air and Noise Pollution

- 2.1 Air Pollution: Source of air pollution. Effect of air pollution on human health, economy, Air pollution control methods.
- 2.2 Noise Pollution: Source of noise pollution, Unit of noise, Effect of noise pollution, Acceptable noise level, Different method of minimizing noise pollution.

UNIT III

Water and Soil Pollution

- 3.1 Water Pollution: Impurities in water, Cause of water pollution, Source of water pollution. Effect of water pollution on human health, Concept of DO, BOD, COD. Prevention of water pollution- Water treatment processes, Sewage treatment. Water quality standard.
- 3.2 Soil Pollution :Sources of soil pollution, Effects and Control of soil pollution, Types of Solid waste- House hold, Industrial, Agricultural, Biomedical, Disposal of solid waste, Solid waste management E-waste, E – waste management

UNIT IV

Impact of Energy Usage on Environment

Global Warming, Green House Effect, Depletion of Ozone Layer, Acid Rain. Eco-friendly Material, Recycling of Material, Concept of Green Buildings, Concept of Carbon Credit & Carbon footprint.

UNIT V

Disaster Management

A. Different Types of Disaster:

Natural Disaster: such as Flood, Cyclone, Earthquakes and Landslides etc. Man-made Disaster: such as Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea Rail & Road), Structural failures (Building and Bridge), War & Terrorism etc.

B. Disaster Preparedness:

Disaster Preparedness Plan Prediction, Early Warnings and Safety Measures of Disaster Psychological response and Management (Trauma, Stress, Rumour and Panic)

RECOMMENDED BOOKS

1. S.C. Sharma & M.P. Poonia, “Environmental Studies”, Khanna Publishing House, New Delhi.
2. BR Sharma, “Environmental and Pollution Awareness”, Satya Prakashan, New Delhi.
3. Dr. RK Khitoliya, “Environmental Pollution”, S Chand Publishing, New Delhi.
4. Erach Bharucha, “Environmental Studies”, University Press (India) Private Ltd., Hyderabad.

5. Suresh K Dhamija, “Environmental Engineering and Management”, S K Kataria and Sons, New Delhi.
6. E-books/e-tools/relevant software to be used as recommended by AICTE/BTE/NITTTR, Chandigarh.
7. Dr. Mrinalini Pandey, “Disaster Management”, Wiley India Pvt. Ltd.

1. Tushar Bhattacharya, “Disaster Science and Management”, McGraw Hill Education (India) Pvt. Ltd.

INSTRUCTIONAL STRATEGY

In addition to theoretical instructions, different activities pertaining to Environmental Studies and Disaster Management like expert lectures, seminars, visits etc. may also be organized. This subject contains five units of equal weightage.

Lesson plan

Name of Faculty		Ms. RENU		
Discipline		Electrical Engineering		
Semester		2 nd (Even-semester)		
Subject		ELECTRICAL NETWORKS		
Lesson Plan		15 January 2026 to 27 April 2026		
Workload (Theory)		(03+04)		
Week	Day	Topics	No.	Practical
1st	1	Mesh analysis	1	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying mesh analysis.
	2	Nodal analysis using voltage and current sources		
	3	Superposition theorem		
2nd	1	Thevenin's theorem	2	Use voltmeter, ammeter to determine current through the given branch of a electric network by applying node analysis.
	2	Norton theorem		
	3	Maximum power transfer theorem		
3rd	1	Active and passive network, Linear and Non Linear network	3	Verification of Superposition Theorem.
	2	Problem solution based on above theorems		
	3	Generation of alternating Voltage and current.		
4th	1	Difference between ac and dc, Equation of alternating quantity.	4	Verification of Thevenin's theorem.
	2	AC Terminology: waveform, cycle, frequency, time period, amplitude		
	3	Instantaneous value, alternation, and their important relations (time period and frequency,		
5th	1	Angular velocity and frequency (etc.)	5	Verification of Norton's Theorems.
	2	Values of alternating voltage and current: Instantaneous value, peak value average value,		
	3	R.M.S. value, form factor and peak factor		
6th	1	Vector representation of alternating quantities	6	Verification of Maximum Power transfer Theorem.
	2	Concept of phase, phase difference and phasors		

	3	Representation of electrical quantities through phasors		
7th	1	Addition of two alternating quantities: parallelogram method,	7	Observe the wave shape of an alternating supply on CRO and calculate average, RMS value, frequency and time period.
	2	A.C circuit containing pure Resistance, Inductance, Capacitance with the concept of Component method power consumed,		
	3	Phase Angle, inductive and capacitive reactance etc.		
8th	1	AC series circuit: R-L, R-C, R-L-C along with the concept of phasor diagram,	8	Measure input current, power, power factor of R-L series circuit and draw the power triangle.
	2	Phase angle, Impedance, impedance triangle, power, power triangle etc.		
	3	Concept of True power, apparent power and reactive power,		
9th	1	Significance, disadvantages of low power factor, cause of low power factor,	9	Measure input current, power, power factor of R-C series circuit and draw the power triangle.
	2	Power factor and its improvement of power factor.		
	3	Active and reactive components of current		
10th	1	Resonance in RLC series circuit, Quality (Q) factor	10	Measure input current, power, power factor of R-L-C series circuit and draw the power triangle.
	2	Concept of AC parallel circuit		
	3	Methods of solving parallel AC circuit: vector method,		
11th	1	Admittance method, symbolic or J-method	11	Use variable frequency supply to create resonance in given series R-L-C circuit or by using variable inductor or variable capacitor.
	2	Parallel Resonance, Q-factor		
	3	Comparison of series and parallel resonance.		
12th	1	Introduction to transient and Harmonics in A.C. circuits	12	To determine current, p.f., active, reactive and apparent power in R-C parallel A.C. circuit.
	2	5.1 Principle of generation of 3- ϕ alternating emf.		
	3	Advantages of Polyphase circuit over single phase circuit, Phase Sequence.		
13th	1	Types of three phase connections - Star connection and delta connection.	13	To determine current, p.f., active, reactive and apparent power for given R-L-C parallel circuit with series connection of resistor and inductor in parallel with capacitor.
	2	Concept of balanced and unbalanced load.		
	3	Relation between phase and line quantities of		

		staranddeltaconnection.		
14th	1	Poly-PhaseSystems,Advantagesof3Ø over 1-Ø	14	Usevariablefrequencysupplycreates resonanceingivenparallelR-L-Ccircuitby usingvariableinductororcapacitor.
	2	SystemStar&deltacconnections withphaseandlinevoltageandc urrentrelations.		
	3	3- phasebalancedandunbalancedcir cuits		
15th	1	Powerin3-phasecircuits		
	2	Revision/Review/TestofoldHSBT EPapers		
	3	Revision/Review/TestofoldHSBT EPapers		

Name of Faculty		Ms. RENU		
Discipline		Electrical Engineering		
Semester		2 nd (Even-semester)		
Subject		NON-CONVENTIONAL SOURCES OF ENERGY		
Workload(Theory + Practical) Per Week		(02+02)		
Week	Day	Topics	No.	Practical
1st	1	Introduction to Energy and Solar Energy ,Classification of Energy Resources: Conventional Energy Resources, Nonconventional Energy Resources	1	1. Visit the website of Ministry of New and Renewable Energy Sources and prepare the Datasheet of Potential, Present and Future Scenario of Renewable energy sources in India.
	2	Roles and responsibility of Ministry of New and Renewable Energy Sources. Needs of renewable energy. Targets and Present Status of Renewable Energy Sources in India		
2nd	1	Solar Energy: Introduction, potential of solar energy in India, Solar Radiation, Principle of conversion of solar radiation into heat,	2	2. Familiarization with the different components used in solar PV plant (standalone and grid connected system), solar water heating system, solar cooker, solar lighting etc.
	2	Construction and working principle of photovoltaic cell. Solar cell materials,		
3rd	1	Difference between solar cell, panel, array, module, Characteristics, important terms related to solar energy, Efficiency of Solar Cells.	3	3. Calculate power flow of a stand-alone PV system with DC load, AC load and battery.
	2	Applications of solar energy like solar PV system (standalone and grid connected), solar water heating system, solar furnaces,		

		solar cookers, solar lighting, solar water pumping system, solar still. Government schemes and policies.	
4th	1	Bio-Energy and Hydro Energy Bio-Energy: Introduction, Biomass energy, Photosynthesis process, Biomass fuels, Biomass energy conversion technologies and applications	4
	2	, Biomass Gasification, Types and application of gasifier, Types of biogas plants, Factors affecting biogas generation, Environmental impacts and benefits, Future role of biomass, Biomass potential and programs in India.	
5th	1	Hydro Energy: Introduction, Capacity and Potential, Hydro Power Plant (mini and micro), Environmental and social impacts.	5
	2	Wind Energy and Geothermal Energy , Wind Energy: Introduction,	
6th	1	Wind energy conversion system, windmills, types of wind mills	6
	2	selection of site, electricity generation from wind energy, Wind Energy potential and Scenario in India	
7th	1	Geothermal Energy: Introduction , Geothermal Resource Utilization like hydrothermal, Geo-pressured hot dry rock, magma,	7
			4. To demonstrate "I-V Characteristics and Efficiency of 1kWp Solar PV System" with varying radiation and temperature level.
			5. Assemble the components of solar home lighting system & study the system.
			6. Assemble the components of solar water heating system system & study the system.
			7. Identify Troubleshoot solar PV panel, inverter and solar smart metering system.

	2	Geothermal based Electric Power Generation,		
8th	1	Associated Problems, environmental Effects, prospects of geothermal energy in India.	8	8. Identify the specified components of a 1 KW Small Wind Turbine (SWT) system and study them.
	2	Tidal Energy and MHD Tidal Energy: Introduction, Capacity and Potential, Principle of Tidal Power, Components of Tidal Power Plant, Classification of Tidal Power Plants.		
9th	1	Ocean Energy: Introduction, Ocean Thermal Energy Conversion (OTEC), Principle of OTEC system, Methods of OTEC power generation, prospects of OTEC in India.	9	9. Estimation of wind speed using anemometer.
	2	MHD power generation: Principle of working of Magneto Hydro Dynamic (MHD) Power Generation, materials for MHD generators and future prospects, performance and limitations.		
10th	1	Fuel Cell and Energy Storage Devices Fuel Cells: Fuel cell definition, difference between batteries and fuel cells, ..	10	10. Study of charging and discharging behavior of a capacitor.
	2	Principle of working of fuel cells ,types of fuel cell, power generation by fuel cell ,conversion efficiency		
11th	1	applications, advantages and disadvantages of fuel cell	11	11. Study of charging characteristics of a Ni-Cd battery using solar photovoltaic panel.
	2	Energy Storage: Need of energy storage, Different modes of		

		energy storage, Flywheel storage, Superconducting Magnet Energy Comparison and application.		
12th	1	Storage (SMES) systems, Capacitor, battery, Super capacitor.	12	12. Identify the prime mover /turbines used in different renewable energy sources for power generation and study them.
	2	Assignments		
13th	1	Class test	13	13. Study the Performance of fuel cell.
	2	Revision of Unit 1& Unit 2		
14th	1	Revision of Unit 3& Unit 4	14	14. Identify the routine maintenance parts of the micro hydro power plant after watching a video
	2	Revision of Unit 5		
15th	1	Previous Exam Papers Solved		Visit nearby renewable power plant and write specification of each components used in that plant.
	2	Previous Exam Papers Solved		

LESSON PLAN

Name of Faculty: Mr. Chetan & Mr. Ravi Kumar

Discipline: Computer Science Engineering ,
Electronics & Communication Engineering

Semester: 2ND

Subject: Engineering Graphics

Duration: 15 Weeks

Teaching Load: 6 Hours practical/week

Week	Day Lecture	Topic
1	1	UNIT-I Introduction to Engineering Drawing and Graphics: Introduction to Engineering Drawing and Graphics, Symbols and conventions-Conventions of Engineering Materials
	2	Sectional Breaks and Conventional lines, Civil Engineering Sanitary fitting symbols, Electrical fitting symbols for domestic interior installations.
2	1	Geometrical construction -geometrical figures such as triangles, rectangles, circles, ellipses and curves, hexagons, pentagons bisecting a line and arc , division of line and circle with the help of drawing instruments.
	2	Technical Lettering of Alphabet and Numerals: Definition and classification of lettering, Free hand (of height of 5,8,12 mm) and instrumental lettering (of height 20 to 35 mm) : upper case and lower case, single and double stroke
3	1	Vertical and inclined (Gothic lettering) at 75 degree to horizontal and with suitable height to width ratio 7:4.
	2	Dimensioning: Necessity of dimensioning, method and principles of dimensioning (mainly theoretical instructions).
4	1	Dimensioning of overall sizes, circles, threaded holes, chamfered surfaces, angles, tapered surfaces,
	2	Holes, equally spaced on P.C.D., countersunk holes, counter bored holes, cylindrical parts, narrow spaces and gaps, radii, curves and arches.
5	1	Scales: Scales –Needs and importance (theoretical instructions), Type of scales, Definition of Representative Fraction (R.F.) and Length of Scale.
	2	To draw/construct plain and diagonal scales.
6	1	Problem Session
	2	1 st sessional
7	1	UNIT II Orthographic Projections: Theory of orthographic projections (Elaborate theoretical instructions). Three views of orthographic projections of different objects of given pictorial view of a block in 1st and 3rd angle.
	2	Projection of Points in different quadrant, Projection of Straight Line (1st angle), Line parallel to both the planes
8	1	Line perpendicular to any one of the reference plane and parallel to others, Line inclined to any one of the references and parallel to another plane.

	2	Projection of Plane – Different lamina like square rectangular, triangular, circle and Hexagonal pentagon. Trace of planes (HT and VT). Identification of surfaces.
9	1	Sectioning: Importance and salient features, Drawing of full section, half section, partial or broken out sections, Offset sections, revolved sections and removed sections (theoretical only).
	2	Orthographic sectional views of different objects.
10	1	Problem session
	2	2 nd sessional
11	1	UNIT III Introduction of projection of right solids such as prism & pyramid (square, Pentagon, Hexagonal) cube, cone & cylinder (Axes perpendicular to H.P and parallel to V.P.) Introduction of sections of right solids - Section planes, Sections of Hexagonal prism, pentagon pyramid, cylinder and cone (Section plane parallel to anyone reference planes and perpendicular to V.P. and inclined to H.P.)
	2	Development of Surfaces – Development of lateral surfaces of right solids like cone, cylinder, pentagonal prism, pyramid and hexagonal pyramid (Simple problems)
12	1	UNIT IV: Isometric Views Fundamentals of isometric projections and isometric scale. Isometric views of different laminas like circle, pentagon and hexagon.
	2	Isometric views of different regular solids like cylinder, cone, cube, cuboid, pyramid and prism. Isometric views from given different orthographic projections(front, side and top view)
13	1	UNIT-V: Introduction to AutoCAD Basic introduction and operational instructions of various commands in AutoCAD. At least two sheets of different objects on AutoCAD (given pictorial/isometric view of a block).
	2	AutoCAD skill of student is evaluated in internal assessment only not in external exam.
14	1	Problem session
	2	3 rd sessional
15	1	Revision
	2	Revision

LESSON PLAN

Name of the Faculty		Mr. Ravi kumar		
Discipline		Mechanical Engineering		
Semester		2nd		
Subject		Applied Mechanics		
Lesson Plan Duration		16 Week		
WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC	PRACTICAL	TOPIC
1	1	Introduction Concept of mechanics,	1 st	1. Verification of polygon law of forces using universal force table/Gravesend apparatus.
	2	Classification of mechanics, utility of mechanics in engineering field		
	3	Concept of rigid body		
2	4	scalar and vector quantities.	2 nd	1. Verification of polygon law of forces using universal force table/Gravesend apparatus.
	5	2. Laws of forces Definition of force, measurement of force in SI units, its representation		
	6	types of force: Point force/concentrated force & Uniformly distributed force, effects of force		
3	7	characteristics of a force, Different force systems (coplanar and non-coplanar),	3 rd	2. Verification of Lami's theorem.
	8	principle of transmissibility of forces, law of superposition		
	9	Free body diagram, Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces		
4	10	laws of forces, parallelogram law of forces (with derivation), triangle law of forces, polygon law of forces - graphically, analytically, resolution of forces	4 th	2. Verification of Lami's theorem.
	11	resolving a force into two rectangular components		
	12	Lami's theorem, Simple numericals, Equilibrium of forces and its determination.		
5	13	Moment Concept of moment, Moment of a force and units of moment	5 th	3 To verify law of moments by using Bell crank lever.
	14	Varignon's theorem (definition only), Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve)		
	15	Simple numericals. Parallel forces (like and unlike parallel force),		
6	16	calculating their resultant, Concept of couple, its properties and effects	6 th	3 To verify law of moments by using Bell crank lever.
	14	General conditions of equilibrium of bodies under coplanar forces, Position of resultant force by moment.		
	18	4. Friction Definition and concept of friction, types of friction, force of friction		
7	19	Laws of static friction, coefficient of friction, angle of friction	7 th	4. To verify the forces in different members of jib crane.
	20	angle of repose, cone of friction, Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying on a rough inclined plane		
	21	Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane and		
	22	subjected to a force acting at some angle with the inclined plane, Simple numericals		4. To verify the forces in different

8	23	5. Centre of Gravity and Centroid Concept	8 th	7. To verify the forces in different members of jib crane.
	24	definition of centroid of plain figures and centre of gravity of symmetrical solid bodies.		
9	25	Axis of symmetry, Reference axis. Determination of centroid of plain and composite lamina (T, L, C and I shape) using moment method only	9 th	5. To determine coefficient of friction between three pairs of given surface.
	26	centroid of bodies with removed portion		
	27	Determination of center of gravity of solid bodies - cone, cylinder, hemisphere and sphere; composite bodies and bodies with portion removed		
10	28	6. Laws of Motion Newton's laws of motion and their applications	10 th	6. To find out center of gravity of regular lamina.
	29	Concept of momentum. Derivation of force equation from second law of motion		
	30	numerical problems on second law of motion		
11	31	Bodies tied with string, Newton's third law of motion numerical problems	11 th	7. To find out center of gravity of irregular lamina.
	32	conservation of momentum, impulse and impulsive force.		
	33	Revision		
12	34	Revision	12 th	8. To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
	35	Simple Machines Definition of effort, velocity ratio, mechanical advantage		
	36	efficiency of a machine and their relationship		
13	37	law of machines, Simple and compound machine (Examples).	13 th	9. To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	38	Definition of ideal machine, reversible and self-locking machine		
	39	Effort lost in friction, Load lost in friction		
14	40	determination of maximum mechanical advantage and maximum efficiency, Simple numerical.	14 th	10. To find mechanical advantage, velocity ratio and efficiency of single purchase crab.
	41	System of pulleys (first, second, third system of pulleys)		
	42	determination of velocity ratio, mechanical advantage		
15	43	Working principle and application of wheel and axle,	15 th	Revision
	44	Weston's Differential Pulley Block		
	45	simple screw jack, worm and worm wheel		
16	46	single and double winch crab	16 th	Revision
	47	Expression for their velocity ratio and field of their application.		
	48	Revision		

MECHANICAL ENGINEERING DEPARTMENT

Session 2025-2026(2nd semester)

Subject: Mechanical Engineering Drawing-I

Load:-6 hrs Practical

Lesson Plan

WEEK	PRACTICALS	
		TOPIC
1st	2 hours	Chapter- 1: Detail and Assembly Drawing Principle and utility of detail and assembly drawings, Practical exercise on drawing from detail to assembly or vice versa
	2 hours	Different wooden joints as example (lap joint – T joint and corner joint, Mortise and tenon joint, Bridle joint,
	2 hours	wooden joint - Mortise and tenon joint (01 sheet)
2nd	2 hours	Chapter-2: THREADS -Nomenclature of threads, types of threads. Single and multiple startthreads, right hand and left hand thread. Forms of various external thread sections
	2 hours	. Simplified conventional representation of V thread. V- thread (Metric thread, British associate, American thread, Basic whitworth thread) (01 sheets)
	2 hours	Square, Acme, Knuckle, and Buttress thread. (01 sheet)
3rd	2 hours	Chapter- 3: Nuts and Bolts Different views of hexagonal and square headed nuts. (01 sheet)
	2 hours	Assembled view of nuts with washers.
	2 hours	Different views of hexagonal and square headed bolts. (01 sheet) Assembled view of bolts with washers.
4th	2hours	Foundation bolt- Rag bolt, Hook bolt,
	2 hours	Lewis bolt, Eye bolt and curved bolt (Free hand) (01 sheet)
	2 hours	Wooden joint : Cross halving joint (01 sheet). Revision of chapter-1
5th	2hours	Revision of chapter- 1,2
	2hours	Revision of chapter -3
	2 hours	1st sessional Test
6th	2hours	Chapter - 4: Locking Devices (01 sheet) Locking nuts - Castle nut, Sawn nut,
	2 hours	Split pin lock nut. Locking by spring washers, Locking plates.
	2 hours	Chapter-5: Screws, Studs and Washers (01 sheet)

7th	2 hours	Chapter-6: Keys and Cotters Introduction, Various types of joints (a) Gib and Cotter joint (01 sheet)
	2 hours	Various types of keys and their application.
	2 hours	Preparation of drawings of various keys and cotters.
8th	2 hours	Various types of joints (b) Knuckle joint. (01 sheet)
	2 hours	Revision
	2 hours	Various types of joints (c) Spigot and Socket joint (01 sheet)
9th	2 hours	Revision of chapter- 4,5,6 & 2nd sessional Test
	2 hours	
	2 hours	
10th	2 hours	Chapter-7: Rivets and Riveted Joints Types of general purpose rivet heads (Snap Head, Pan Head , Flat and counter sunk)
	2 hours	Types of riveted joints – lap (single and double riveted), (01 sheet)
	2 hours	butt (single cover plate and double cover plate), chain and zig-zag riveting (Double riveted). Caulking and fullering operation of riveted joints. (01 sheet)
11th	2 hours	Chapter-8: Shaft Coupling Introduction to coupling, their uses and types,
	2 hours	Muff Coupling. (01 sheet)
	2 hours	Protected type flange coupling. Flexible or non-rigid coupling. (01 sheet)
12th	2 hours	Chapter- 9: Computer Aided Drafting (CAD) (01sheets) Introduction
	2 hours	Various 2 D commands – Draw, modify and option commands (basic) (01 sheet)
12th	2 hours	Prepare at least 4 sheets using CAD software – one drawing each from wooden joint (01 sheets)
13th	2 hours	Prepare at least 4 sheets using CAD software – one drawing each from threads
	2 hours	nut (basic) (01sheet)
	2 hours	Prepare at least 4 sheets using CAD software – one drawing each from bolts, coupling(basic) (02 sheets)
14th	2 hours	Revision of Chapter- 7,8,9 & 3rd sessional Test
	2 hours	
15th	4 hours	Doubt session/Revision
	2 hours	Doubt session/Revision

Subject Incharge-Mr Amit Attri

O/I Department-Mr Amit Attri

Lesson Plan

Name of the Faculty : Mr. Monu

Discipline : Mechanical Engg.

Semester : 2nd Sem

Subject : WT-I

Lesson plan duration : 16 weeks

Week	Theory	
	Lecture Day	Topic(including assignments/tests)
1 st Week	1 st	UNIT I 1. Hand Tools Chisels – Types and uses of chisels, wood working chisels, metal working chisels – cold chisel, hard chisel, stone chisel, masonry chisel
	2 nd	Hammers – Types, Basic design and variations, Physics of hammering, Hammer as force multiplier, effect of head's mass, effect of handle.
	3 rd	Saw – Saw terminology, types of saws, types of saw blades, material used for saw,
Week2	1 st	Hacksaw frame and its types. Pliers – Function and types.
	2 nd	Wrenches/ Spanners – Common General wrenches/spanners,
	3 rd	Specialized wrenches/spanners,
Week3	1 st	Surface plate, V block, files, Surface Gauge
	2 nd	Surface plate, V block, files, Surface Gauge
	3 rd	Revision
Week4	1 st	2. Measuring Instruments Calipers – Types – Inside, outside, divider, Odd leg caliper.
	2 nd	Vernier Caliper- Parts, uses, checking error, least count, working principle.
	3 rd	Outside micrometer - Introduction, parts, Principle, Least count, Checking zero error.
Week5	1 st	Outside micrometer - Introduction, parts, Principle, Least count, Checking zero error.
	2 nd	Revision
	3 rd	Revision
Week6	1 st	UNIT II 3. Cutting Tools and Cutting Materials Cutting Tools - Various types of single point cutting tools and their uses,

	2 nd	Single point cutting tool geometry, tool signature and its effect,
	3 rd	Heat produced during cutting and its effect, Cutting speed, feed and depth of cut and their effect.
Week7	1 st	Cutting Tool Materials - Properties of cutting tool material
	2 nd	Study of various cutting tool materials viz. High-speed steel, tungsten carbide,
	3 rd	Study of various cutting tool materials viz. cobalt steel cemented carbides, stellite
Week8	1 st	Study of various cutting tool materials viz. ceramics and diamond
	2 nd	Revision
	3 rd	Revision
Week9	1 st	UNIT IV 5. Lathe Principle of turning, Description and function of various parts of a lathe. Classification and specification of various types of lathe,
	2 nd	Drives and transmission, Work holding devices.
	3 rd	Lathe tools: Parameters/Nomenclature and applications.
Week10	1 st	Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling, form turning, spinning.
	2 nd	Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time.
	3 rd	Speed ratio, preferred numbers of speed selection.
Week11	1 st	Lathe accessories:- Centers, dogs, different types of chucks, collets, face plate
	2 nd	angle plate, mandrel, steady rest, follower rest, taper turning attachment,
	3 rd	tool post grinder, milling attachment, Quick change device for tools.
Week12	1 st	Brief description of capstan and turret lathe,
	2 nd	comparison of capstan/turret lathe,
	3 rd	work holding and tool guiding devices in capstan and turret lathe.
Week13	1 st	UNIT V 6. Drilling Principle of drilling. Classification of drilling machines and their description. Various operation performed on drilling machine – drilling,
	2 nd	spot facing, reaming, boring, counter boring, counter sinking, hole milling, tapping.
	3 rd	Speeds and feeds during drilling, impact of these parameters on drilling, machining time
Week14	1 st	Types of drills and their features, nomenclature of a drill. Drill holding devices. Types of reamers.
	2 nd	Boring Principle of boring, Classification of boring machines and their brief description.
	3 rd	Specification of boring machines. Boring tools, boring bars and boring heads.
Week15	1 st	Description of jig boring machine.
	2 nd	

		8. Cutting Fluids and Lubricants Function of cutting fluid, Types of cutting fluids, Difference between cutting fluid and lubricant,
	3 rd	Selection of cutting fluids for different materials and operations,
Week16	1 st	Common methods of lubrication of machine tools, Certifying
	2 nd	Organizations (such as SAE, ASTM) for rating standards of lubricants.
	3 rd	Revision

LESSON PLAN

NAME OF FACULTY Mr. Arun and Mr Dwijender Pal and Mr. Tarshem kumar

DISCIPLINE Electrical engg.

SEMESTER 2nd sem.

SUBJECT Basic Electric shop

LESSON PLAN DURATION : 15 WEEKS

WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -08

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1	Study safety measures while working or handling the electrical equipments. Use of fire extinguisher during electric fire. Study the methods to take restoration of person suffering from electric shock.
	2	Identification of common electrical materials with standard ratings and specifications such as wires, cables, switches, 1-pole, 2-pole and 3-pole MCB, RCCB & ELCB, fuses, cleats, clamps and allied items, tools and accessories.
2	3	Identification, use and connectio of various types of switches such as : normal/miniature toggle, slide, push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
	4	Identification, use and connectio of various types of switches such as : normal/miniature toggle, slide, push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
3	5	Identification and familiarization of following electrical wiring tool switch respect to their usage: Screw drivers (different sizes), Insulated Pliers, Cutter, Sniper, Screw Driver (Star Screw Driver), L-Keys, Soldering Iron, soldering wire, flux, Drilling machines and Drilling Bits, Voltage/line tester, Insulation remover, Standard Wire Gauge .
	6	Soldering wire jointing of different types such as straight joint/ married joint, T joint, Western union joint, pig tail joint.
4	7	Making of extension board containing two 5A and one 15A plug points.
	8	To make a single phase main distribution board with five outgoing circuits for light and fan load including main switch and fuse (only internal connection).
5	9	Fault detection and repair of domestic electric installation
	10	Fault detection and its repair in institution's workshop installations
6	11	Carrying out house wiring circuits using fuse, switches ,sockets ,ceiling rose etc. in batten or P.V.C. casing-caping. Demo of conduit wiring through junctions.
	12	Winding/re-winding of a fan(ceiling and table)/motor and BLDC
7	13	Repair and maintenance of domestic electric appliances, i.e. electric iron, geyser, fan, heat convector, desert cooler, room heater, electric kettle, electric oven, electric furnace etc.
	14	Dismantling and assembly of voltage stabilizers
8	15	Assembly and interchange wiring of fluorescent tube light, CFL lamp etc.
	16	Earth resistance measurement and earthing processes. To carry out pipe/plate earthing for a small house and 3-phase induction motor. Testing the earthing using earth tester.
9	17	Coil winding for small transformer or alarm bell.
	18	Assembling small transformer cores from the given lamination plates.
10	19	Assembling small battery charger.
	20	Connections of single phase and 3-phase motors, through an appropriate starter and to change their direction of rotation. Wiring, testing and fault finding of the following contactor control circuits operating on 3-phase supply: a) Remote control circuits b) Time delay circuits c) Interlocking circuits d) Sequential operation control circuits
11	21	Connections of single phase and 3-phase motors, through an appropriate starter and to change their direction of rotation. Wiring, testing and fault finding of the following contactor control circuits operating on 3-phase supply: a) Remote control circuits b) Time delay circuits c) Interlocking circuits d) Sequential operation control circuits
	22	Connections of single phase and 3-phase motors, through an appropriate starter and to change their direction of rotation. Wiring, testing and fault finding of the following contactor control circuits operating on 3-phase supply: a) Remote control circuits b) Time delay circuits c) Interlocking circuits d) Sequential operation control circuits
12	23	Dismantling/assembly of star-delta and DOL starter.
	24	Design a printed circuit Board (PCB) for voltage regulator using zener diode.
13	25	Armature winding of 3 phase induction motor.
	26	Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
14	27	Introduction to single phase and three phase supply and wiring system. Importance of three phase supply (RYB) & its sequence and wiring system.
	28	Connecting Generator and 3 phase wiring through Change over Switch.
15	29	Power cable jointing using epoxy based jointing kits.
	30	Demonstration of laying of underground cables at worksite

LESSON PLAN

NAME OF FACULTY	Mr. Arun and Mr Dwijender Pal	
DISCIPLINE	ECE	
SEMESTER	2nd sem.	
SUBJECT	Electrical and Electronics Workshop-II	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -04		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1	Introduction to single phase and three phase supply and wiring system. Importance of three phase supply (RYB) & its sequence and wiring system.
	2	Job I Connecting Generator and 3 phase wiring through Changeover Switch . Estimating and costing of power consumption
2	3	Job II Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
	4	Study of internal wiring diagram of common electrical appliances such as auto electric iron, electric kettle, ceiling/table fan, desert cooler etc. Demonstration of dismantling, servicing and reassembling of table/ceiling fan, air-cooler, auto electric iron, heater etc.
3	5	Study of internal wiring diagram of common electrical appliances such as auto electric iron, electric kettle, ceiling/table fan, desert cooler etc. Demonstration of dismantling, servicing and reassembling of table/ceiling fan, air-cooler, auto electric iron, heater etc.
	6	Job III Dismantling, servicing and reassembling of any of the above electrical appliances, finding faults with series testing lamp and multimeter.
4	7	Job III Dismantling, servicing and reassembling of any of the above electrical appliances, finding faults with series testing lamp and multimeter.
	8	Identification and familiarization with the following tools:Soldering Iron and its use.
5	9	Job IV Practice on joining using soldering flux and removing components/wires by desoldering
	10	Various types of protective devices such as : wire fuse,cartridge fuse etc.
6	11	Demonstrate the joining (or connecting) methods/mounting and dismantling method, as well as uses of the items mentioned below: a) Various types of plugs,sockets,connectors suitable for general purpose audio video use. Connectors,Banana plugs,sockets and similar male and female connectors and terminal strips. b) Various types of switches such as: normal/miniature toggle,slide,push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
	12	Demonstrate the joining (or connecting) methods/mounting and dismantling method, as well as uses of the items mentioned below: a) Various types of plugs,sockets,connectors suitable for general purpose audio video use. Connectors,Banana plugs,sockets and similar male and female connectors and terminal strips. b) Various types of switches such as: normal/miniature toggle,slide,push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
7	13	Demonstrate the joining (or connecting) methods/mounting and dismantling method, as well as uses of the items mentioned below: a) Various types of plugs,sockets,connectors suitable for general purpose audio video use. Connectors,Banana plugs,sockets and similar male and female connectors and terminal strips. b) Various types of switches such as: normal/miniature toggle,slide,push button piano key, rotary, SPST, SPDT, DPST, DPDT, band selector, multi-way Master Mains Switch.
	14	Job-I Cut,bend,tin component,leads,inserts.Solder components e.g. resistor,capacitor,diodes, transistors on a PCB
8	15	Job-II Wiring of a small circuit on a PCB /tag strip involving laying,sleeving and use of identifier tags
	16	Job-III De-soldering practice with de-soldering pump and with de-soldering wick.
9	17	Job-IV Cut,strip,join and insulate two lengths of wires / cables (repeat with different types of cables/ wires)
	18	Introduction: What is PCB, Difference between PWB and PCB,
10	19	Types of PCBs: Single/Double Sided and Multi-Layer PCBs
	20	PCB Layer Masks: Top Layer Mask, Bottom Layer Mask, Solder Mask, Legend Print or Silk screen Mask, Hand-Taping Vs CAD
11	21	PCB Materials:FR-2 and FR-4 material advantages and disadvantages,PCB Design Rules.
	22	PCB Materials:FR-2 and FR-4 material advantages and disadvantages,PCB Design Rules.
12	23	Brief History of EDA, Latest Trends in Market, How it helps and Why it requires, Different EDA Tools (Licensed like Orcad or Free Open Source Software like Circuit Maker or Dip Trace or Eagle etc.),
	24	Schematic Entry, Net listing, Electrical Rule Check (ERC),
13	25	PCB Layout Designing, Auto and Manual Routing, Design Rule Check (DRC), Gerber Generation, Creating Library, Creating component, Symbols and Footprints for components.
	26	PCB Layout Designing, Auto and Manual Routing, Design Rule Check (DRC), Gerber Generation, Creating Library, Creating component, Symbols and Footprints for components.
14	27	Photo Processing for Pattern Transfer, Etching, Drilling, Component Mounting, Soldering and De-soldering,
	28	Photo Processing for Pattern Transfer, Etching, Drilling, Component Mounting, Soldering and De-soldering,
15	29	PCB Testing, PCB design and fabrication of Basic Analog Electronic Circuits, Power Supplies, 555 Based circuits etc.
	30	PCB Testing, PCB design and fabrication of Basic Analog Electronic Circuits, Power Supplies, 555 Based circuits etc.

LESSON PLAN		
NAME OF FACULTY	Mr Dwijender Pal	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	Electrical and Electronics Workshop-II	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G5)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
	2(G6)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
2	3(G1)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
	4(G2)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
3	5(G3)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
	6(G4)	Job I Connecting single phase energy meter with supply and load. Reading and working out power consumption and cost of energy.
4	7(G5)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
	8(G6)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
5	9(G1)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
	10(G2)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
6	11(G3)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
	12(G4)	Job II Connection of single phase/three phase motor by using starter.Reversing direction of rotation of single phase and three Phase motors.
7	13(G5)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
	14(G6)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
8	15(G1)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
	16(G2)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
9	17(G3)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
	18(G4)	Job III Cut,bend,tin components,leads,inserts.Solder components for example resistor, capacitor, diode, transistor and other components on a PCB.
10	19(G5)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
	20(G6)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
11	21(G1)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
	22(G2)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
12	23(G3)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
	24(G4)	Job IV Wiring of a small circuit on a PCB/ TAG strip involving laying, sleeving and use of identifier tags.
13	25(G5)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.
	26(G6)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.
14	27(G1)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.
	28(G2)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.
15	29(G3)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.
	30(G4)	Job V Cut, strip, join and insulate two lengths of wires/cables. Desoldering practice with desoldering pump and desoldering wick.

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr Tarshem Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	Welding Shop-II	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G1)	JobI Beading Practice by gas welding.
	2(G2)	JobI Beading Practice by gas welding.
2	3(G3)	JobI Beading Practice by gas welding.
	4(G4)	JobI Beading Practice by gas welding.
3	5(G5)	JobI Beading Practice by gas welding.
	6(G6)	JobI Beading Practice by gas welding.
4	7(G1)	JobII Preparation of lap joint on M.S. flat using gas welding.
	8(G2)	JobII Preparation of lap joint on M.S. flat using gas welding.
5	9(G3)	JobII Preparation of lap joint on M.S. flat using gas welding.
	10(G4)	JobII Preparation of lap joint on M.S. flat using gas welding.
6	11(G5)	JobII Preparation of lap joint on M.S. flat using gas welding.
	12(G6)	JobII Preparation of lap joint on M.S. flat using gas welding.
7	13(G1)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
	14(G2)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
8	15(G3)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
	16(G4)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
9	17(G5)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
	18(G6)	Job III Preparation of doubleV butt joint /corner joint on M.S.flat using gas welding /arc welding process
10	19(G1)	JobIV Preparation of pipe joint using gas /arc welding
	20(G2)	JobIV Preparation of pipe joint using gas /arc welding
11	21(G3)	JobIV Preparation of pipe joint using gas /arc welding
	22(G4)	JobIV Preparation of pipe joint using gas /arc welding
12	23(G5)	JobIV Preparation of pipe joint using gas /arc welding
	24(G6)	JobIV Preparation of pipe joint using gas /arc welding
13	25(G1)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.
	26(G2)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.
14	27(G3)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.
	28(G4)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.
15	29(G5)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.
	30(G6)	Job V Preparation of a small cot frame/stool/table frame/drawing table frame)using gas or arc welding.

* Demostration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Rajnesh Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	Fitting and Plumbing Shop	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G2)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
	2(G3)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
2	3(G4)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
	4(G5)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
3	5(G6)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
	6(G1)	JobI To perform drilling and reaming operation on mild steel flat.file and make angle,surfaces (Bevel gauge accuracy1degree)makes impleopenand sliding fits Inside square fit, make combined open and sliding fit, straight sides
4	7(G2)	Job II To make assembly for V shape or square shape fit.
	8(G3)	Job II To make assembly for V shape or square shape fit.
5	9(G4)	Job II To make assembly for V shape or square shape fit.
	10(G5)	Job II To make assembly for V shape or square shape fit.
6	11(G6)	Job II To make assembly for V shape or square shape fit.
	12(G1)	Job II To make assembly for V shape or square shape fit.
7	13(G2)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
	14(G3)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
8	15(G4)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
	16(G5)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
9	17(G6)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
	18(G1)	JobIII Radius form filing on the corners, Sliding fitting, Diamond fitting, Lapping flat surfaces using lapping plate.Application of lapping, material for lapping tools, lapping abrasives, charging of lapping tool. Surface finish importance, equipment for testing-terms relation to surface finish
10	19(G2)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
	20(G3)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
11	21(G4)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
	22(G5)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
12	23(G6)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
	24(G1)	JobIV To make step assembly.Introduction to various types of threads (internal and external)-single start,multi-start,left hand and right hand threads.
13	25(G2)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.
	26(G3)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.
14	27(G4)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.
	28(G5)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.
15	29(G6)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.
	30(G1)	JobV To make over head tank assembly with GI/C-PVC pipe sand joints.

* Demostration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Surender Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	Carpentry Shop	

LESSON PLAN DURATION : 15 WEEKS

WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G3)	Job I To make a dove tail joint.
	2(G4)	Job I To make a dove tail joint.
2	3(G5)	Job I To make a dove tail joint.
	4(G6)	Job I To make a dove tail joint.
3	5(G1)	Job I To make a dove tail joint.
	6(G2)	Job I To make a dove tail joint.
4	7(G3)	Job II To make a mitred joint
	8(G4)	Job II To make a mitred joint.
5	9(G5)	Job II To make a mitred joint.
	10(G6)	Job II To make a mitred joint.
6	11(G1)	Job II To make a mitred joint.
	12(G2)	Job II To make a mitred joint.
7	13(G3)	JobIII To make a lengthening joint by using different joints.
	14(G4)	JobIII To make a lengthening joint by using different joints.
8	15(G5)	JobIII To make a lengthening joint by using different joints.
	16(G6)	JobIII To make a lengthening joint by using different joints.
9	17(G1)	JobIII To make a lengthening joint by using different joints.
	18(G2)	JobIII To make a lengthening joint by using different joints.
10	19(G3)	Job IV To make a job using different type of wood turning operations including form turning and
	20(G4)	Job IV To make a job using different type of wood turning operations including form turning and
11	21(G5)	Job IV To make a job using different type of wood turning operations including form turning and
	22(G6)	Job IV To make a job using different type of wood turning operations including form turning and
12	23(G1)	Job IV To make a job using different type of wood turning operations including form turning and
	24(G2)	Job IV To make a job using different type of wood turning operations including form turning and
13	25(G3)	JobV To make a medium size wooden dustbin/ wooden tray.
	26(G4)	JobV To make a medium size wooden dustbin/ wooden tray.
14	27(G5)	JobV To make a medium size wooden dustbin/ wooden tray.
	28(G6)	JobV To make a medium size wooden dustbin/ wooden tray.
15	29(G1)	JobV To make a medium size wooden dustbin/ wooden tray.
	30(G2)	JobV To make a medium size wooden dustbin/ wooden tray.

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Ashok Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	TurningShop	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G6)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
	2(G1)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
2	3(G2)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
	4(G3)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
3	5(G4)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
	6(G5)	Job I Centering practice in 4 jaw chuck,setting of cutting tool point at appropriate height and perform facing and plain
4	7(G6)	Job II To sharpen various angles of turning tool.
	8(G1)	Job II To sharpen various angles of turning tool.
5	9(G2)	Job II To sharpen various angles of turning tool.
	10(G3)	Job II To sharpen various angles of turning tool.
6	11(G4)	Job II To sharpen various angles of turning tool.
	12(G5)	Job II To sharpen various angles of turning tool.
7	13(G6)	Job III To perform step turning on MS rod.
	14(G1)	Job III To perform step turning on MS rod.
8	15(G2)	Job III To perform step turning on MS rod.
	16(G3)	Job III To perform step turning on MS rod.
9	17(G4)	Job III To perform step turning on MS rod.
	18(G5)	Job III To perform step turning on MS rod.
10	19(G6)	JobIV To perform taper turning and under cutting operation.
	20(G1)	JobIV To perform taper turning and under cutting operation.
11	21(G2)	JobIV To perform taper turning and under cutting operation.
	22(G3)	JobIV To perform taper turning and under cutting operation.
12	23(G4)	JobIV To perform taper turning and under cutting operation.
	24(G5)	JobIV To perform taper turning and under cutting operation.
13	25(G6)	JobV To perform step turning and knurling operation on MS rod.
	26(G1)	JobV To perform step turning and knurling operation on MS rod.
14	27(G2)	JobV To perform step turning and knurling operation on MS rod.
	28(G3)	JobV To perform step turning and knurling operation on MS rod.
15	29(G4)	JobV To perform step turning and knurling operation on MS rod.
	30(G5)	JobV To perform step turning and knurling operation on MS rod.

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Nasib Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	2nd sem.	
SUBJECT	Smithy Shop	

LESSON PLAN DURATION : 15 WEEKS

WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G4)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
	2(G5)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
2	3(G6)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
	4(G1)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
3	5(G2)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
	6(G3)	Job I To forge a square/hexagonal shape on both ends from a MS round by cold forging
4	7(G4)	Job II To make a utility item like fan hook, ring, U type door handle
	8(G5)	Job II To make a utility item like fan hook, ring, U type door handle
5	9(G6)	Job II To make a utility item like fan hook, ring, U type door handle
	10(G1)	Job II To make a utility item like fan hook, ring, U type door handle
6	11(G2)	Job II To make a utility item like fan hook, ring, U type door handle
	12(G3)	Job II To make a utility item like fan hook, ring, U type door handle
7	13(G4)	Job III To make a ring of MS round by forge welding
	14(G5)	Job III To make a ring of MS round by forge welding
8	15(G6)	Job III To make a ring of MS round by forge welding
	16(G1)	Job III To make a ring of MS round by forge welding
9	17(G2)	Job III To make a ring of MS round by forge welding
	18(G3)	Job III To make a ring of MS round by forge welding
10	19(G4)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
	20(G5)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
11	21(G6)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
	22(G1)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
12	23(G2)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
	24(G3)	Job IV To make a hexagonal chisel by hot forging process with hardening and tempering
13	25(G4)	Job V To perform bending process by hot forging
	26(G5)	Job V To perform bending process by hot forging
14	27(G6)	Job V To perform bending process by hot forging
	28(G1)	Job V To perform bending process by hot forging
15	29(G2)	Job V To perform bending process by hot forging
	30(G3)	Job V To perform bending process by hot forging

* Demonstration and Introduction part is to be covered as per the syllabus along with the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Rajnesh Kumar, Mr. Tarshem Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	4th sem.	
SUBJECT	WT-III(Advance Fitting)	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G1-g1)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
	2(G2-g1)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
2	3(G1-g2)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
	4(G2-g2)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
3	5(G1-g3)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
	6(G2-g3)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
4	7(G1-g4)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
	8(G2-g4)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
5	9(G1-g1)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
	10(G2-g1)	Prepare a composite job of drilling ,reaming ,counter boring, counter sinking and tapping operations.
6	11(G1-g2)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
	12(G2-g2)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
7	13(G1-g3)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
	14(G2-g3)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
8	15(G1-g4)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
	16(G2-g4)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
9	17(G1-g1)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
	18(G2-g1)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
10	19(G1-g2)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
	20(G2-g2)	Prepare dove tail fitting on mild steel specimen. or Prepare radius fitting on mild steel specimen
11	21(G1-g3)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
	22(G2-g3)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
12	23(G1-g4)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
	24(G2-g4)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
13	25(G1-g1)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
	26(G2-g1)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
14	27(G1-g2)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
	28(G2-g2)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
15	29(G1-g3,g4)	Perform pipe threading operation using die and assembly of the same with pipe fittings.
	30(G2-g3,g4)	Perform pipe threading operation using die and assembly of the same with pipe fittings.

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Surender Kumar and Mr. Arun	
DISCIPLINE	Mech.Engg..	
SEMESTER	4th sem.	
SUBJECT	WT-III (Grinding Shop)	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G1-g2)	Job on grinding machine using a surface grinder
	2(G2-g2)	Job on grinding machine using a surface grinder
2	3(G1-g3)	Job on grinding machine using a surface grinder
	4(G2-g3)	Job on grinding machine using a surface grinder
3	5(G1-g4)	Job on grinding machine using a surface grinder
	6(G2-g4)	Job on grinding machine using a surface grinder
4	7(G1-g1)	Job on grinding machine using a surface grinder
	8(G2-g1)	Job on grinding machine using a surface grinder
5	9(G1-g2)	Prepare a job on cylindrical grinding machine
	10(G2-g2)	Prepare a job on cylindrical grinding machine
6	11(G1-g3)	Prepare a job on cylindrical grinding machine
	12(G2-g3)	Prepare a job on cylindrical grinding machine
7	13(G1-g4)	Prepare a job on cylindrical grinding machine
	14(G2-g4)	Prepare a job on cylindrical grinding machine
8	15(G1-g1)	Prepare a job on cylindrical grinding machine
	16(G2-g1)	Prepare a job on cylindrical grinding machine
9	17(G1-g2)	Grinding a drill-bit on tool and cutter grinder.
	18(G2-g2)	Grinding a drill-bit on tool and cutter grinder.
10	19(G1-g3)	Grinding a drill-bit on tool and cutter grinder.
	20(G2-g3)	Grinding a drill-bit on tool and cutter grinder.
11	21(G1-g4)	Grinding a drill-bit on tool and cutter grinder.
	22(G2-g4)	Grinding a drill-bit on tool and cutter grinder.
12	23(G1-g1)	Grinding a drill-bit on tool and cutter grinder.
	24(G2-g1)	Grinding a drill-bit on tool and cutter grinder.
13	25(G1-g2)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.
	26(G2-g2)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.
14	27(G1-g3)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.
	28(G2-g3)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.
15	29(G1-g4,g3)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.
	30(G2-g4,g3)	Prepare a job on center less grinding machine.Exercise on dressing a grinding wheel.

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Ashok Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	4th sem.	
SUBJECT	WT-III (Advance Machine Shop)	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G1-g3)	Prepare a slot on one face using milling machine
	2(G2-g3)	Prepare a slot on one face using milling machine
2	3(G1-g4)	Prepare a slot on one face using milling machine
	4(G2-g4)	Prepare a slot on one face using milling machine
3	5(G1-g1)	Prepare a slot on one face using milling machine
	6(G2-g1)	Prepare a slot on one face using milling machine
4	7(G1-g2)	Prepare a slot on one face using milling machine
	8(G2-g2)	Prepare a slot on one face using milling machine
5	9(G1-g3)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
	10(G2-g3)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
6	11(G1-g4)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
	12(G2-g4)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
7	13(G1-g1)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
	14(G2-g1)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
8	15(G1-g2)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
	16(G2-g2)	Prepare a T slot on vertical milling machine. Prepare a job on milling machine by using a form cutter
9	17(G1-g3)	Exercise of cutting a spur gear on a hobbing machine
	18(G2-g3)	Exercise of cutting a spur gear on a hobbing machine
10	19(G1-g4)	Exercise of cutting a spur gear on a hobbing machine
	20(G2-g4)	Exercise of cutting a spur gear on a hobbing machine
11	21(G1-g1)	Exercise of cutting a spur gear on a hobbing machine
	22(G2-g1)	Exercise of cutting a spur gear on a hobbing machine
12	23(G1-g2)	Exercise of cutting a spur gear on a hobbing machine
	24(G2-g2)	Exercise of cutting a spur gear on a hobbing machine
13	25(G1-g3)	Perform machining operation on EDM/wire cut machine.
	26(G2-g3)	Perform machining operation on EDM/wire cut machine.
14	27(G1-g4)	Perform machining operation on EDM/wire cut machine.
	28(G2-g4)	Perform machining operation on EDM/wire cut machine.
15	29(G1-g1,g2)	Perform machining operation on EDM/wire cut machine.
	30(G2-g1,g2)	Perform machining operation on EDM/wire cut machine.

* Demostration and Introduction part is to be covered as per the syllabus alongwith the job preparation.

LESSON PLAN

NAME OF FACULTY	Mr. Nasib Kumar	
DISCIPLINE	Mech.Engg..	
SEMESTER	4th sem.	
SUBJECT	WT-III(Metal coating and Finishing Shop)	
LESSON PLAN DURATION : 15 WEEKS		
WORK LOAD (LECTURE/ PRACTICAL) : PRACTICALS -06		
WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1	1(G1-g4)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
	2(G2-g4)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
2	3(G1-g1)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
	4(G2-g1)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
3	5(G1-g2)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
	6(G2-g2)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
4	7(G1-g3)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
	8(G2-g3)	Prepare a job by using metal finishing operations such as lapping,buffering ,polishing, burnishing on a work piece.
5	9(G1-g4)	Prepare a job to finish an internal surface using honing process.
	10(G2-g4)	Prepare a job to finish an internal surface using honing process.
6	11(G1-g1)	Prepare a job to finish an internal surface using honing process.
	12(G2-g1)	Prepare a job to finish an internal surface using honing process.
7	13(G1-g2)	Prepare a job to finish an internal surface using honing process.
	14(G2-g2)	Prepare a job to finish an internal surface using honing process.
8	15(G1-g3)	Prepare a job to finish an internal surface using honing process.
	16(G2-g3)	Prepare a job to finish an internal surface using honing process.
9	17(G1-g4)	Carryout electroplating on a job.
	18(G2-g4)	Carryout electroplating on a job.
10	19(G1-g1)	Carryout electroplating on a job.
	20(G2-g1)	Carryout electroplating on a job.
11	21(G1-g2)	Carryout electroplating on a job.
	22(G2-g2)	Carryout electroplating on a job.
12	23(G1-g3)	Carryout electroplating on a job.
	24(G2-g3)	Carryout electroplating on a job.
13	25(G1-g4)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating
	26(G2-g4)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating
14	27(G1-g1)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating
	28(G2-g1)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating
15	29(G1-g2,g3)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating
	30(G2-g2,g3)	Finishing a metal surface using a metal spray Finishing a metal surface using powder Coating

* Demonstration and Introduction part is to be covered as per the syllabus alongwith the job preparation.