# Lesson Plan

| | |
|---|---|
| **Discipline:** | MECHANICAL |
| **Semester:** | 3RD |
| **Subject:** | WORKSHOP TECHNOLOGY -1 |

Lesson Plan Duration: 15 weeks

| **Week** | | **Theory** |
|---|---|---|
| | **Lecture day** | **Topic** |
| **1st** | **1st** | **Welding ;-** Principle of welding |
| | **2nd** | Classification of welding processes |
| | **3rd** | Advantages & limitations of welding, industrial application of welding |
| | **4th** | Welding position and techniques, symbols, safety precautions in welding |
| **2nd** | **1st** | Gas Welding, Principle of operation, types of gas welding flames and their applications |
| | **2nd** | Gas welding equipments, Gas welding torch , Oxygen cylinders, Acetylene cylinder, cutting torch |
| | **3rd** | Blow pipe, pressure regulators, filler roads |
| | **4th** | Fluxes and personal safety equipments for welding |
| **3rd** | **1st** | Arc welding, Principle of operation, arc welding machine and equipments |
| | **2nd** | A.C. & D.C. arc welding, effect of polarity, current regulation and voltage regulation |
| | **3rd** | Electrodes :- classification, B.I.S. specification and selection, flux for arc welding |
| | **4th** | Requirements of pre heating, post heating of electrodes and work piece welding defects and their testing method |
| **4th** | **1st** | Resistance welding :- principle, advantages, limitations |
| | **2nd** | Working and application of spot welding, seam welding, projection welding |
| | **3rd** | Percussion welding, atomic hydrogen welding, shielded metal arc welding, submerged arc welding |

| | | |
|---|---|---|
| | **4th** | Welding distortion, welding defects, methods of controlling welding defect and inspection of welded joints |
| **5th** | **1st** | Modern welding methods :- methods, principle of operations, advantages, disadvantages and applications of tungsten inert gas welding |
| | **2nd** | Metal inert gas welding, thermit welding |
| | **3rd** | Electro slag welding, electron beam welding |
| | **4th** | Ultrasonic welding, laser beam welding, robotic welding |
| **6th** | **1st** | **Foundry techniques :-** pattern making, types of pattern, pattern materials |
| | **2nd** | Pattern allowances, pattern codes as per B.I.S. |
| | **3rd** | Introduction to cores, core boxes & core materials |
| | **4th** | Core making procedures, core prints, positioning of cores |
| **7th** | **1st** | Moulding & casting :- moulding sand, properties of moulding sands, their impact and control of properties, viz. permeability refractoriness |
| | **2nd** | Adhesiveness , cohesiveness, strength, flow ability, collapsibility |
| | **3rd** | Various types of moulding sand |
| | **4th** | Testing of moulding sand, safety precautions in foundry |
| **8th** | **1st** | Mould making :- types of moulds, step involved in making a mould |
| | **2nd** | Moulding boxes, hand tool used for mould making |
| | **3rd** | Moulding processes :- bench moulding, floor moulding, |
| **9th** | **1st** | Pit moulding & machine moulding |
| | **2nd** | Moulding machines, squeeze machines, jolt squeeze machine & sand slinger |
| | **3rd** | Casting Process :- charging a furnace, melting and pouring both ferrous and non ferrous metals |
| | **4th** | Cleaning of castings, principle, working and application of die casting |
| **10th** | **1st** | Hot chamber and cold chamber, centrifugal casting |

| | | |
|---|---|---|
| | **2nd** | Gating and risering system:- elements of gating system, pouring basin, sprue, runner, gates |
| | **3rd** | Types of risers, location of risers, directional solidification |
| | **4th** | Melting furnaces :- construction and working of pit furnace, cupola furnace |
| **11th** | **1st** | Crucible furnace- tilting type, electric furnace |
| | **2nd** | Casting defects :- different types of casting defects |
| | **3rd** | Testing of defects :- radiography, magnetic particle inspection and ultra sonic inspection |
| | **4th** | **Metal forming processes :-** press working, type of presses, type of dies, selection of press die, die material |
| **12th** | **1st** | Press operations -shearing, piercing, trimming, punching |
| | **2nd** | Notching, shaving, gearing, embossing, stamping |
| | **3rd** | Forging – open die forging, closed die forging |
| | **4th** | Press forging, upset forging, swaging |
| **13th** | **1st** | Up setters, roll forging, cold & hot forging |
| | **2nd** | Rolling – elementary theory of rolling, types of rolling mills |
| | **3rd** | Thread rolling, roll passes |
| | **4th** | Rolling defects & remedies |
| **14th** | **1st** | Extrusion and drawing – types of extrusion, hot and cold, Direct & indirect |
| | **2nd** | pipe drawing, wire drawing, tube drawing |
| | **3rd** | **Plastic processing :-** industrial use of plastic and applications |
| | **4th** | Advantages & limitations of use of plastic |
| **15th** | **1st** | Injection moulding principle |
| | **2nd** | Working of injection moulding machine |

| | | |
|---|---|---|
| | **3rd** | Compression moulding principle |
| | **4th** | Working of compression moulding machine |

**Lesson Plan**

**Discipline:- Mechanical Engineering**

**Semester:- 3rd**

**Subject:- SOM**

**Lesson Plan Duration:- 15 weeks**

**Work Load:- Lectures-3, Practicals-2**

| WEEK | THEORY | | PRACTICAL | |
|---|---|---|---|---|
| | LECTURE DAY | TOPIC | PRACTICAL DAY | TOPIC |
| 1st | 1st | Introduction to the subject | 1st | Significance of practical work and Preparation of file |
| | 2nd | Stresses and Strains:- Basic concept of load, stress and strain | | |
| | 3rd | Tensile, compressive and shear stresses Linear strain, Lateral strain, Shear strain | 2nd | Significance of practical work and Preparation of file |
| 2nd | 1st | Volumetric strain, Stress-strain curve for ductile materials | 1st | Tensile test on bars of Mild steel and Aluminium |
| | 2nd | Stress-strain curve for brittle materials, | | |
| | 3rd | Nominal stress, Yield point, Ultimate stress and breaking stress | 2nd | Tensile test on bars of Mild steel and Aluminium |
| 3rd | 1st | Percentage elongation, Proof stress and working stress, Factor of safety | 1st | Bending tests on a steel bar or a wooden beam |
| | 2nd | Poisson's Ratio, Thermal stress and strain | | |
| | 3rd | Longitudinal and circumferential stresses in seamless thin walled cylindrical shells. | 2nd | Bending tests on a steel bar or a wooden beam |
| 4th | 1st | Introduction to Principal stresses | 1st | Impact test on metals<br>a) Izod test |
| | 2nd | Revision | | |
| | 3rd | Resilience:- Strain Energy, Resilience, proof resilience and modulus of resilience | 2nd | Impact test on metals<br>a) Izod test |
| 5th | 1st | Strain energy due to direct stresses and Shear Stress | 1st | Impact test on metals<br>b) Charpy test |
| | 2nd | Stresses due to gradual, sudden and falling load | | |

| WEEK | THEORY | | PRACTICAL | |
|---|---|---|---|---|
| | LECTURE DAY | TOPIC | PRACTICAL DAY | TOPIC |
| | 3rd | Revision | 2nd | Impact test on metals<br>b) Charpy test |
| 6th | 1st | **1st Sessional** | | |
| | 2nd | | | |
| | 3rd | | | |
| 7th | 1st | Moment of Inertia : Concept of moment of inertia and second moment of area, Radius of gyration. | 1st | Torsion test of solid specimen of circular section of different metals for determining modulus of rigidity |
| | 2nd | Theorem of perpendicular axis and parallel axis (with derivation) | | |
| | 3rd | Second moment of area of common geometrical sections : Rectangle, Triangle, Circle (without derivation) | 2nd | Torsion test of solid specimen of circular section of different metals for determining modulus of rigidity |
| 8th | 1st | Second moment of area for L,T and I section | 1st | To plot a graph between load and extension |
| | 2nd | Section modulus | | |
| | 3rd | Bending Moment and Shearing Force: Concept of various types of beams and form of loading | 2nd | To plot a graph between load and extension |
| 9th | 1st | B.M. and S.F. Diagram for cantilever and simply supported beams with and without overhang subjected to concentrated and U.D.L | 1st | File Checking |
| | 2nd | Bending stresses: Concept of Bending stresses, Theory of simple bending, Derivation of Bending Equation | | |
| | 3rd | Use of the equation $\frac{M}{I} = \frac{\sigma}{y} = \frac{E}{R}$ | 2nd | |
| 10th | 1st | **Sessional 2nd** | | |
| | 2nd | | | |
| | 3rd | | | |
| 11th | 1st | Concept of moment of resistance, Bending stress diagram | 1st | To determine the stiffness of a helical spring. |
| | 2nd | Section modulus for rectangular, circular and symmetrical I section | | |
| | 3rd | Calculation of maximum bending stress in beams of rectangular, circular, and T section | 2nd | To determine the stiffness of a helical spring. |

| WEEK | THEORY | | PRACTICAL | |
|---|---|---|---|---|
| | LECTURE DAY | TOPIC | PRACTICAL DAY | TOPIC |
| 12th | 1st | Columns: Concept of column, modes of failure, Buckling load, crushing load | 1st | Hardness test on different metals |
| | 2nd | Slenderness ratio, Effective length, Factors effecting strength of a column | | |
| | 3rd | Strength of column by Euler Formula without derivation | 2nd | Hardness test on different metals |
| 13th | 1st | Torsion: Derivation of Torsion Equation, use of torsion equation for circular shaft | 1st | File Checking |
| | 2nd | Comparison between solid and hollow shaft with regard to their strength and weight | | |
| | 3rd | Power transmitted by shaft, Concept of mean and maximum torque | 2nd | |
| 14th | 1st | Springs: Closed coil helical springs subjected to axial load and calculation of: Stress deformation<br>- Stiffness and angle of twist and strain energy | 1st | Internal Viva Voce |
| | 2nd | - Strain energy and proof resilience. | | |
| | 3rd | Determination of number of plates of laminated spring (semi elliptical type only) | 2nd | |
| 15th | 1st | **Sessional 3rd** | | |
| | 2nd | | | |
| | 3rd | | | |

| | | | | |
|---|---|---|---|---|
| Name of Faculty | | | | |
| Discipline | | | Mechanical Engineering | |
| Semester | | | 3rd | |
| Subject | | | Thermodynamics | |
| Lesson Plan Duration | | | 15 weeks | |
| Workload Lecture/Practical per week in Hours: Lecture (3), Practical (3) | | | | |
| | **Theory Lecture** | | **Practical** | |
| **Week** | **Day** | **Topic (including assignment/ test)** | **Day** | **Topic** |
| 1st | 1st | Thermodynamic state and system, boundary, surrounding, universe, thermodynamic systems – closed, open, isolated, adiabatic, homogeneous and heterogeneous | 1st | Introduction to Thermodynamics Lab |
| | 2nd | Macroscopic and microscopic study/ approach, properties of system – intensive and extensive, thermodynamic equilibrium, quasi – static process, reversible and irreversible processes | | |
| | 3rd | Zeroth law of thermodynamics, definition of properties like pressure, volume, temperature, enthalpy and internal energy | | |
| 2nd | 4th | Backlog Coverage/ Revision/ HW & CW evaluation/ Discussion/ Q&A/ Doubt Clearing | 2nd | Determination of temperature by<br>1 Thermocouple<br>2 Pyrometer<br>3 Infrared thermometer |
| | 5th | Definition of gases, explanation of perfect gas laws – Boyle's law, Charle's law, Avagadro's law, Regnault's law, Universal gas constant, Characteristic gas constants and its derivation. | | |
| | 6th | Specific heat at constant pressure, specific heat at constant volume of a gas, derivation of an expression for specific heats with characteristics, simple numerical problems on gas equation. | | |
| 3rd | 7th | Backlog Coverage/ Revision/ Assignment-1/ Discussion/ Q&A/ Doubt Clearing | 3rd | Demonstration of mountings on a boiler. |
| | 8th | Types of thermodynamic processes- isochoric process and their equations, derivation for workdone, change in internal energy, change in entropy, enthalpy, heat transfer for the process. | | |
| | 9th | Isobaric, Isothermal and their equations, derivation for workdone, change in internal energy, change in entropy, enthalpy, heat transfer for the process. | | |
| 4th | 10th | Backlog Coverage/ Revision/ Assignment-1 evaluation/ Discussion/ Q&A/ Doubt Clearing | 4th | Demonstration of accessories on a boiler. |
| | 11th | Adiabatic, Isentropic, Polytropic, Throttling process and their equations, derivation for workdone, change in internal energy, change in entropy, enthalpy, heat transfer for the process. | | |
| | 12th | Laws of conservation of energy, first law of thermodynamics (Joule's experiment) and its limitations | | |
| 5th | 13th | Flow system, Non-flow system, Application of first law of thermodynamics to Non-flow systems like Constant Volume process | 5th | Study the working of Lancashire boiler and Nestler boiler. |
| | 14th | Application of first law of thermodynamics to Non-flow systems like Constant pressure, Adiabatic and Polytropic processes | | |
| | 15th | Steady Flow Energy Equation (SFEE), Application of steady flow energy equation for turbines, pump, boilers | | |

| | | | | |
|---|---|---|---|---|
| 7th | 19th | Heat source and sink, Statements of Second laws of thermodynamics: Kelvin Planck's statement, Classius statement | 7th | Study of working of high pressure boiler. |
| | 20th | Equivalency of K-P and Clausius statements, Perpetual Motion Machine of first kind, second kind, Carnot engine, Introduction of third law of thermodynamics | | |
| | 21st | Concept of irreversibility and concept of entropy | | |
| 8th | 22nd | Backlog Coverage/ Revision/ Assignment-2/ Discussion/ Q&A/ Doubt Clearing | 8th | Study of boilers (Through industrial visit) |
| | 23rd | Concept of ideal gas, enthalpy and specific heat capacities of an ideal gas, P – v – t surface of an ideal gas, triple point, real gases, vander-wall's equation | | |
| | 24th | properties of steam, sensible heat, latent heat, internal energy of steam, entropy of water, entropy of steam, steam tables | | |
| 9th | 25th | T- s diagrams, mollier diagram (h – s Chart), expansion of steam | 9th | Objective Type Question/ Answer |
| | 26th | Hyperbolic, reversible adiabatic and throttling processes, determination of quality of steam (dryness fraction) | | |
| | 27th | tube and water tube boilers | | |
| 10th | 28th | Function of various boiler mounting | 10th | Backlog Coverage |
| | 29th | Function of various boiler accessories | | |
| | 30th | Construction and working of lancashire boiler, nestler boiler, babcock & wilcox boiler, introduction to modern boilers. | | |
| 11th | 31st | Sessional test-2 | 11th | Sessional test-2 |
| | 32nd | Sessional test-2 | | |
| | 33rd | Sessional test-2 | | |
| 12th | 34th | Meaning of air standard cycle – its use, condition of reversibility of a cycle, description of carnot cycle, otto cycle, diesel cycle, Simple problems on efficiency for different cycles | 12th | Determination of Dryness fraction of steam using calorimeter. |
| | 35th | Comparison of otto, diesel cycles for same compression ratio, same peak pressure developed and same heat input. | | |
| | 36th | Reasons for highest efficiency of carnot cycle and all other cycles working between same temperature limits | | |
| 13th | 37th | Functions of air compressor – uses of compressed air, type of air compressors | 13th | Demonstrate the working of air compressor. |
| | 38th | Single stage reciprocating air compressor, its construction and working, representation of processes involved on P – V diagram, calculation of work done. | | |
| | 39th | Multistage compressors – advantages over single stage compressors, use of air cooler, Condition of minimum work in two stage compressor (without proof), simple problems | | |
| 14th | 40th | Rotary compressors – types, working and construction of centrifugal compressor, axial flow compressor, vane type compressor | 14th | Evaluation & Internal Viva-voce |
| | 41st | Backlog Coverage/ Revision/ Assignment-2 evaluation/ Discussion/ Q&A/ Doubt Clearing | | |

# Lesson Plan

Discipline : **Mechanical Engg. Deptt.**

Semester : **3rd Semester**

Subject : **Mechanical Engg. Drawing**

Lesson Plan Duration : **15-16 weeks**

| Week | Topic / Chapter | Practical day | Topic |
|---|---|---|---|
| **1st** | **Chapter 1 : Limit, fits and tolerance (01 sheets)** | (Group-1 | Need of limit, fits and tolerance, Maximum limit of size, minimum limit of size, tolerance, allowance, deviation, upper deviation, lower deviation, fundamental deviation, clearance, maximum clearance, minimum clearance**.** |
| | | (Group-2) | Need of limit, fits and tolerance, Maximum limit of size, minimum limit of size, tolerance, allowance, deviation, upper deviation, lower deviation, fundamental deviation, clearance, maximum clearance, minimum clearance**.** |
| | | Sheet 1 (Group-1) | clearance fit, interference fit and transition fit. Hole basis system, shaft basis system, tolerance grades, calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like $H_7$/g6, $H_7$/m6, $H_8$/p6. Basic terminology and symbols of geometrical |

| | | | |
|---|---|---|---|
| | | | dimensioning and tolerances. |
| | | Sheet 1 (Group-2) | clearance fit, interference fit and transition fit. Hole basis system, shaft basis system, tolerance grades, calculating values of clearance, interference, hole tolerance, shaft tolerance with given basic size for common assemblies like $H_7$/g6, $H_7$/m6, $H_8$/p6. Basic terminology and symbols of geometrical dimensioning and tolerances. |
| **2nd** | **Chapter 2 : Universal coupling and Oldham coupling (Assembly)**<br><br>**&**<br><br>**Chapter 3 : Bearings** | Sheet 2 (Group-1) | Universal coupling and Oldham coupling (Assembly) |
| | | Sheet 2 (Group-2) | Universal coupling and Oldham coupling (Assembly) |
| | | Sheet 3 (Group-1) | Bushed Bearing (Assembly Drawing) |
| | | Sheet 3 (Group-2) | Bushed Bearing (Assembly Drawing) |
| **3rd** | **Chapter 3 : Bearings** | Sheet 4 (Group-1) | Ball Bearing and Roller Bearing (Assembled Drawing) |
| | | Sheet 4 (Group-2) | Ball Bearing and Roller Bearing (Assembled Drawing |
| | | Sheet 5 (Group-1) | Plummer Block (Detail and Assembly Drawing) |
| | | Sheet 5 (Group-2) | Plummer Block (Detail and Assembly Drawing) |
| **4th** | **Chapter 3 : Bearings**<br>**&**<br>**Chapter 4 : Pulleys** | Sheet 6 (Group-1) | Foot step Bearing (Assembled Drawing) |
| | | Sheet 6 (Group-2) | Foot step Bearing (Assembled Drawing) |
| | | Sheet 7 | Free hand Sketch of Various planes |

| | | | |
|---|---|---|---|
| | | (Group-1) | types of pulleys |
| | | Sheet 7 (Group-2) | Free hand Sketch of Various types of pulleys |
| **5th** | **Chapter 4 : Pulleys**<br><br>**&**<br>**Chapter 5 : Pipe Joints** | Sheet 8 (Group-1) | Fast and loose pulley (Assembly Drawing) |
| | | Sheet 8 (Group-2) | Fast and loose pulley (Assembly Drawing) |
| | | Sheet 9 (Group-1) | Types of pipe Joints, Symbol and line layout of pipe lines |
| | | Sheet 9 (Group-2) | Types of pipe Joints, Symbol and line layout of pipe lines |
| **6th** | **Chapter 5 : Pipe Joints** | Sheet 10 (Group-1) | Expansion pipe joint (Assembly drawing) |
| | | Sheet 10 (Group-2) | Expansion pipe joint (Assembly drawing) |
| | | Sheet 11 (Group-1) | Flanged pipe and right angled bend joint (Assembly Drawing) |
| | | Sheet 11 (Group-2) | Flanged pipe and right angled bend joint (Assembly Drawing) |
| **7th** | **Chapter 6 : Lathe Tool Holder**<br><br>**&**<br><br>**Chapter 7 : Reading & Interpretation of Mechanical Components** | Sheet 12 (Group-1) | Lathe Tool Holder (Assembly Drawing) |
| | | Sheet 12 (Group-2) | Lathe Tool Holder (Assembly Drawing) |
| | | Sheet 13 (Group-1) | Reading and interpretation of mechanical components and assembly drawings |
| | | Sheet 13 (Group-2) | Reading and interpretation of mechanical components and assembly drawings |
| **8th** | **Chapter 8 : Bearing & Brackets (Sketches)**<br><br>**&**<br>**Chapter 9 : Drilling Jig**<br><br>**&** | Sheet 14 (Group-1) | Sketching practice of bearings and bracket. |
| | | Sheet 14 (Group-2) | Sketching practice of bearings and bracket. |
| | | Sheet 15 (Group-1) | Drilling Jig (Assembly Drawing) |
| | | Sheet 15 (Group-2) | Drilling Jig (Assembly Drawing) |
| **9th** | **Chapter 10 : Machine Vice** | Sheet 16 (Group-1) | Machine vices (Assembly Drawing) |
| | | Sheet 16 (Group-2) | Machine vices (Assembly Drawing) |

| | | | |
|---|---|---|---|
| | | Sheet 17 (Group-1) | Machine vices (Assembly Drawing) |
| | | Sheet 17 (Group-2) | Machine vices (Assembly Drawing) |
| **10th** | **Chapter 10 : I.C. Engine Parts** | Sheet 18 (Group-1) | Piston |
| | | Sheet 18 (Group-2) | Piston |
| | | Sheet 19 (Group-1) | Connecting rod (Assembly Drawing) |
| | | Sheet 19 (Group-2) | Connecting rod (Assembly Drawing) |
| **11th** | **Chapter 10 : I.C. Engine Parts**<br>**&**<br>**Chapter 11 : Boiler Parts** | Sheet 20 (Group-1) | Crankshaft and flywheel (Assembly Drawing) |
| | | Sheet 20 (Group-2) | Crankshaft and flywheel (Assembly Drawing) |
| | | Sheet 21 (Group-1) | Steam Stop Valve (Assembly Drawing) |
| | | Sheet 21 (Group-2) | Steam Stop Valve (Assembly Drawing |
| **12th** | **Chapter 11 : Boiler Parts**<br>**&**<br>**Chapter 12 : Mechanical Screw Jack** | Sheet 22 (Group-1) | Blow off cock. (Assembly Drawing) |
| | | Sheet 22 (Group-2) | Blow off cock. (Assembly Drawing) |
| | | Sheet 23 (Group-1) | Mechanical Screw Jack (Assembled Drawing) |
| | | Sheet 23 (Group-2) | Mechanical Screw Jack (Assembled Drawing) |
| **13th** | **Chapter 13 : Gears** | Sheet 24 (Group-1) | Gear, Types of gears, Nomenclature of gears and conventional representation |
| | | Sheet 24 (Group-2) | Gear, Types of gears, Nomenclature of gears and conventional representation |
| | | Sheet 25 (Group-1) | Draw the actual profile of involute teeth of spur gear by different methods. |

| | | | |
|---|---|---|---|
| | | Sheet 25<br>(Group-2) | Draw the actual profile<br>of involute teeth of spur gear<br>by different methods. |

# Lesson Plan

**Discipline :** **Mechanical Engineering**
**Semester :** **3rd Semester**
**Subject :** **BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING**
**Lesson Plan Duration:** **15 weeks**
**Work Load :** **(L/P) (3 Periods/ 2 periods) /Week**

| | Theory | | Practical |
|---|---|---|---|
| **Week** | **Lecture Day** | **Topics** | **Topics** |
| 1st | 1st | **Unit 1 Application and Advantage of Electricity-** Difference between ac and dc, various applications of electricity | 1st Connection of a three-phase motor and starter with fuses and reversing of direction of rotation |
| | 2nd | advantages of electrical energy over other types of energy | |
| | 3rd | **Unit 2 Basic Electrical Quantities-** Definition of voltage, current, power and energy with their unit | |
| | 4th | name of instruments used for measuring above | |
| 2nd | 5th | connection of these instruments in an electric circuit | 2nd Connection of a single-phase induction motor with supply and reversing of its direction of rotation |
| | 6th | **Unit 3 AC Fundamentals-** Electromagnetic induction-Faraday's Laws, Lenz's Law; | |
| | 7th | Principles of a.c. Circuits; Alternating emf, | |
| | 8th | amplitude and time period. Instantaneous, average | |
| 3rd | 9th | r.m.s and maximum value of sinusoidal wave | 3rd Troubleshooting in domestic wiring system, including distribution board |
| | 10th | form factor and Peak Factor. Concept of phase and phase | |
| | 11th | difference. Concept of resistance, | |
| | 12th | inductance and capacitance in simple a.c. circuit | |
| 4th | 13th | power factor and improvement of power factor by use of capacitors. | 4th Connection and reading of an electric energy meter |
| | 14th | Concept of three phase system | |
| | 15th | star and delta connections | |
| | 16th | voltage and current relationship (no derivation) | |
| 5th | 17th | Definition of cycle, frequency | 5th Useofammeter,voltmeter, wattmeter, and multi-meter |
| | 18th | **Unit 4 Transformers-**Introduction | |

| | | | |
|---|---|---|---|
| | 19th | Working principle and construction of single phase transformer | |
| | 20th | **SESSIONAL I** | |
| 6th | 21st | transformer ratio, emf equation | 6th Measurement of power and power factor in a given single phase ac circuit |
| | 22nd | losses and efficiency, cooling of transformers | |
| | 23rd | isolation transformer, CVT | |
| | 24th | auto transformer (brief idea), applications. | |
| 7th | 25th | **Unit 5 Distribution System-**Introduction | 7th Study of different types of fuses, MCBs and ELCBs |
| | 26th | Difference between high and low voltage distribution system, identification of three-phase wires | |
| | 27th | neutral wire and earth wire in a low voltage distribution system. | |
| | 28th | Identification of voltages between phases | |
| 8th | 29th | between one phase and neutral. Difference between three-phase and single-phase supply | 8th Study of zener diode as a constant voltage source and to draw its V-I characteristics |
| | 30th | **Unit 6 Electric Motor-** Description and applications of single-phase and three-phase | |
| | 31st | Connection and starting of three-phase induction motors by star-delta starter | |
| | 32nd | Changing direction of rotation of a given 3 phase | |
| 9th | 33rd | Motors used for driving pumps | 9th Study of earthing practices |
| | 34th | compressors, centrifuge, dyers etc. | |
| | 35th | Totally enclosed submersible and flame proof | |
| | 36th | **Unit 7 Domestic Installation-** Introduction | |
| 10th | 37th | [Simple problems on the above topics] | 10th To draw V-I characteristics of a (i) NPN transistor |
| | 38th | Distinction between light-fan circuit | |
| | 39th | **SESSIONAL II** | |
| | 40th | single phase power circuit, sub-circuits | |
| 11th | 41st | various accessories and parts of domestic electrical installation | 11th To draw V-I characteristics of (ii) thyristor (SCR) |
| | 42nd | Identification of wiring systems | |
| | 43rd | Common safety measures and earthing | |
| | 44th | **Unit 8 Electrical Safety**-Introduction | |
| 12th | 45th | Electrical shock and precautions against shock | Study of construction and working of a (i) stepper motor and |
| | 46th | treatment of electric shock | |
| | 47th | concept of fuses and their classification | |

| | | | |
|---|---|---|---|
| | 48th | selection and application, | |
| 13th | 49th | concept of earthing and various types of earthing | Study of construction and working of a (ii) servo motor |
| | 50th | applications of MCBs and ELCBs | |
| | 51st | **Unit 9 Basic Electronics** | |
| | 52nd | Basic idea of semiconductors – P and N type | |
| 14th | 53rd | diodes, zener diodes and their applications | REVISION OF PRACTICALS |
| | 54th | transistor – PNP and NPN | |
| | 55th | their characteristics and uses. | |
| | 56th | Characteristics and applications of a thyristor | |
| 15th | 57th | characteristics and applications of stepper motors | **VIVA-VOCE** |
| | 58th | servo motors in process control. | |
| | 59th | REVISION OF SYLLABUS | |
| | 60th | **SESSIONAL TEST –III** | |