Lesson Plan

Name of Faculty : KULDEEP SINGH

Discipline : Mechanical Engg.

Semester : 3rd

Subject : BEEE

Lesson Plan Duration : 16 weeks

Work load (Lecture /Practical) per week (in hours): Lectures—03, Practical—02

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| Week |  | Theory | Practical |
| Lecture Day | Topic (Including Assignment/ Test) | Practical Day | Topic |
| 1st | 1 | Difference between ac and dc, various applications of electricity | 1st | Introduction to BEEE Lab |
| 2 | Advantages of electrical energy over other types of energy |
| 3 | Assignment |
| 2nd | 4 | Definition of voltage, current, power and energy with their units | 2nd |  Connection of a three-phase motor and starter with fuses and reversing of direction of rotation |
| 5 | Name of instruments used for measuring above quantities |
| 6 | Connection of these instruments in an electric circuit |
| 3rd | 7 | Assignment / Test | 3rd |  Connection of a single-phase induction motor with supply and reversing of its direction of rotation  |
| 8 | Electromagnetic induction-Faraday’s Laws, Lenz’s Law; Fleming’s rules |
| 9 | Principles of a.c. Circuits; Alternating emf, Definition of cycle |
| 4th | 10 | frequency, amplitude and time period. Instantaneous, average, r.m.s and maximum value of sinusoidal wave | 4th |  Troubleshooting in domestic wiring system, including distribution board |
| 11 | Form factor and Peak Factor |
| 12 | Concept of phase and phase difference  |
| 5th | 13 | Concept of resistance, inductance and capacitance in simple a.c.  | 5th | Connection and reading of an electric energy meter  |
| 14 | Power factor and improvement of power factor by use of capacitors |
|  15 | Concept of three phase system; star and delta connections; voltage and current relationship (no derivation) |
| 6th | 16 | Assignment / Test | 6th | Use of ammeter, voltmeter, wattmeter, and multi-meter  |
| 17 | Working principle and construction of single phase transformer |
| 18 | transformer ratio emf equation |
| 7th | 19 | losses and efficiency of Transformer | 7th | Measurement of power and power factor in a given single phase ac circuit |
| 20 | cooling of transformers, isolation transformer |
| 21 | CVT |
| 8th | 22 | Auto transformer (brief idea), applications.  | 8th | Study of different types of fuses, MCBs and ELCBs |
| 23 | Difference between high and low voltage distribution system |
| 24 | identification of three-phase wires |
| 9th | 25 | Neutral wire and earth wire in a low voltage distribution system | 9th |  Study of zener diode as a constant voltage source and to draw its V-I characteristics  |
| 26 | Identification of voltages between phases and between one phase and neutral |
| 27 | Difference between three-phase and single-phase supply |
| 10th | 28 | Description and applications of single-phase motors | 10th |  Study of earthing practices |
| 29 | Description and applications of three-phase motors |
| 30 | Connection and starting of three-phase induction motors by star-delta starter |
| 11th | 31 | Changing direction of rotation of a given 3 phase induction motor | 11th | To draw V-I characteristics of a (i) NPN transistor |
| 32 | Motors used for driving pumps, compressors |
| 33 | Centrifuge, dyers |
| 12th | 34 | Totally enclosed submersible and flame proof motors | 12th |  To draw V-I characteristics of a (i) thyristor (SCR) |
| 35 | Distinction between light-fan circuit and single phase power circuit, sub-circuits |
| 36 | Various accessories and parts of domestic electrical installation |
| 13th | 37 | Identification of wiring systems.  | 13th | Study of construction and working of a (i) stepper motor |
| 38 | Common safety measures and earthing |
| 39 | Electrical shock and precautions against shock, treatment of electric shock, |
| 14th | 40 | Concept of fuses and their classification, selection and application | 14th | Study of construction and working of a (i) servo motor |
| 41 | Concept of earthing and various types of earthing |
| 42 | Applications of MCBs and ELCBs |
| 15th | 43 | Basic idea of semiconductors – P and N type; diodes | 15th | Revision  |
| 44 | Zener diodes and their applications |
| 45 | Transistor – PNP and NPN, their characteristics and uses |
| 16th | 46 | Characteristics and applications of a thyristor characteristics  | 16th | Revision |
| 47 | Characteristics and applications of stepper motors and servo motors in process control |
| 48 |  |