Lesson Plan

Name of faculty : Sita Devi

Discipline : Electrical Engineering

Semester : 5th

Subject : Electrical Machine -1

Lesson plan duration : 15 weeks

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| **Week** | **Lecture** | **Topic (Including Assignment / Test) : Planned** | **Actually covered on**  **(date)** | **HOD’s Sign** | **DP’s**  **Sign** |
| 1st | 1 | Energy in a magnetic systems |  |  |  |
| 2 | field energy and mechanical force |  |  |  |
| 3 | energy in singly and multiply excited magnetic systems |  |  |  |
| 2nd | 4 | Transformer construction |  |  |  |
| 5 | theory and operation, E.M.F. equation |  |  |  |
| 6 | Ideal and practical trans former |  |  |  |
| 3rd | 7 | exact and approximate equivalent circuits |  |  |  |
| 8 | no load and on load operation |  |  |  |
| 9 | phasor diagrams |  |  |  |
| 4th | 10 | power and energy efficiency |  |  |  |
| 11 | open and short circuit tests |  |  |  |
| 12 | back to back test |  |  |  |
| 5th | 13 | voltage regulation |  |  |  |
| 14 | effect of load on power factor |  |  |  |
| 15 | Per Unit transformer values, excitation phenomenon in transformers |  |  |  |
| 6th | 16 | Auto transformers (construction, working & applications) |  |  |  |
| 17 | Constructional features of three phase transformers |  |  |  |
| 18 | Cooling methodology, parallel operation of single phase and three phase transformers |  |  |  |
| **7th** |  | **1stSessionals** |  |  |  |
| 8th | 19 | three phase transformer connections, phasor groups |  |  |  |
| 20 | three phase to two phase and six phase conversion. |  |  |  |
| 21 | Three winding transformers and its equivalent circuit |  |  |  |
| 9th | 22 | Tap changing of transformers |  |  |  |
| 23 | tertiary winding, Applications. Variable frequency transformer |  |  |  |
| 24 | voltage and current transformers |  |  |  |
| 10th | 25 | Grounding transformer, welding transformers |  |  |  |
| 26 | Pulse transformer and applications |  |  |  |
| 27 | Construction, working and types of dc generator |  |  |  |
| 11th | 28 | EMF equation, lap & wave winding |  |  |  |
| 29 | distributed & concentrated windings, armature reaction |  |  |  |
| 30 | commutation, interpoles and compensating windings |  |  |  |
| 12th | 31 | characteristics of dc generators, voltage build up |  |  |  |
| 32 | Parallel operation of DC generators, Applications |  |  |  |
| 33 | Principles of working, Significance of back emf |  |  |  |
| 13th | 34 | Torque Equation, Types and Characteristics of DC Motors |  |  |  |
| 35 | Need of Starter, three point starter, four point starter |  |  |  |
| 36 | Speed Control (armature resistance, flux control, armature voltage, Thyrisor) |  |  |  |
| **14th** |  | **2ndSessionals** |  |  |  |
| 15th | 37 | Ward-Leonard system, Swinburne’s test, Hopkinson’s test |  |  |  |
| 38 | braking of dc motor (regenerative, Dynamic, Plugging), Losses and Efficiency |  |  |  |
| 39 | Effect of saturation and armature reaction on losses; Applications. |  |  |  |