Lesson Plan

Name of faculty : Er. Ruby Sathiala

Discipline : Electrical Engineering

Semester : 4th

Subject : Electrical Machines-II (EE-210-L)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Week | Theory | | **Date of Actual covered** | **Signatures** | | | |
| Lecture  Day | Topic (Including assignment / Test) | **Concerned teacher** | **HOD** | **DP** | |
| **Unit-I** | | | | | | | |
| 1st | 1 | Introduction to AC machines |  |  |  | |  |
| 2 | Induction machines: Constructional features |
| 3 | Production of torque and phasor diagram |
| 4 | Equivalent circuit and performance analysis |
| 2nd | 5 | Torque-slip characteristics |  |  |  | |  |
| 6 | Testing running light and blocked rotor test |
| 7 | Load test & effect of rotor resistance |
| 8 | Deep bar and double cage induction motor |
| 3rd | 9 | Starting method of squirrel cage and wound rotor induction motor |  |  |  | |  |
| 10 | Various methods of speed control of squirrel cage and wound rotor induction motor |
| 11 | Effect of space harmonics |
| 12 | Generator operation |
| **Unit-II** | | | | | | | |
| 4th | 13 | Introduction to single phase induction motors |  |  |  | |  |
| 14 | Constructional features |
| 15 | Double revolving field theory |
| 16 | Equivalent circuit and determination of parameters |
| 5th | 17 | Split phase starting methods & applications |  |  |  | |  |
| 18 | Introduction to Polyphase AC Commutator machines |
| 19 | Effect of voltage injection in rotor circuit of slip ring induction motor by auxiliary commutator machines |
| 20 | Kramers arrangement |
| 6th | 21 | Scherbius arrangement |  |  |  | |  |
| 22 | Principle & operation of doubly fed commutator motor |
| 23 | Schrage motor |
| 24 | Revision |
| **7th** | **1st Minor Test** | | | | | | |
| **Unit-III** | | | | | | | |
| 8th | 25 | Introduction to synchronous generator |  |  |  | |  |
| 26 | Constructional features |
| 27 | Cylindrical rotor machine |
| 28 | Generated emf, Circuit model and phasor diagram |
| 9th | 29 | Armature reaction, synchronous impedance |  |  |  | |  |
| 30 | Voltage regulation and different methods for its estimation |
| 31 | Salient pole machine |
| 32 | Two reaction theory |
| 10th | 33 | Analysis of phasor diagram |  |  |  | |  |
| 34 | Power angle characteristics |
| 35 | Determination of Xd |
| 36 | Determination of Xq |
| **Unit-IV** | | | | | | | |
| 11th | 37 | Need of parallel operation |  |  |  | |  |
| 38 | Parallel operation of alternators |
| 39 | Synchronization |
| 40 | Load division |
| 12th | 41 | Introduction to Synchronous motors |  |  |  | |  |
| 42 | Operating principle |
| 43 | Working |
| 44 | Circuit model |
| 13th | 45 | Phasor diagram |  |  |  | |  |
| 46 | Effect of load |
| 47 | Operating characteristics |
| 48 | V-curves |
| **14th** | **2nd Minor test** | | | | | | |
| 15th | 49 | Inverted V-curves |  |  |  | |  |
|  | 50 | Starting methods |
|  | 51 | Applications |
|  | 52 | Revision |

Lesson Plan

Name of faculty : Er. Ruby Sathiala

Discipline : Electrical Engineering

Semester : 4th

Subject : Electrical Machines-II Lab (EE-210-P)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Week** | **Practical** | | | | **Date of Actual covered** | **Signature** | | |
|  |  |  | **Practical**  **Day** | **Topic** | **Concerned teacher** | **HOD** | **DP** |
| 1st | 1 |  | 1 | To determine the mechanical losses by light running of a three phase induction motor. |  |  |  |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 2nd | 5 |  | 2 | To perform load test on a here phase induction motor & DC Generator set and determine the efficiency of induction motor. |  |  |  |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 3rd | 9 |  | 3 | To perform light running test and blocked rotor test on a three phase induction motor and determine the parameters of the equivalent circuit. |  |  |  |  |
| 10 |  |
| 11 |  |
| 12 |  |
| 4th | 13 |  | 4 | To perform open circuit test and blocked rotor test on a three phase induction motor and draw the circle diagram. |  |  |  |  |
| 14 |  |
| 15 |  |
| 16 |  |
| 5th | 17 |  | 5 | To find out the rotor resistance of a poly phase induction motor. |  |  |  |  |
| 18 |  |
| 19 |  |
| 20 |  |
| 6th | 21 |  | 6 | 1st Internal viva |  |  |  |  |
| 22 |  |
| 23 |  |
| 24 |  |
| **7th** | **1st Minor Test** | | | |  |  |  |  |
| 8th | 25 |  | 7 | To calculate regulation of alternator by synchronous impedance method:   1. Conduct open and short circuit test on a three phase alternator. 2. Determine and plot variation of synchronous impedance with If. 3. Determine S.C.R. 4. Determine regulations for 0.8 lagging power factor, 0.8 leading power factor and unity power factor. |  |  |  |  |
| 26 |  |
| 27 |  |
| 28 |  |
| 9th | 29 |  | 8 | To plot V-curves of a synchronous machine   1. Determination of Xo of a synchronous machine. 2. Measurement Xd’ +Xq’. |  |  |  |  |
| 30 |  |
| 31 |  |
| 32 |  |
| 10th | 33 |  | 9 | To measure Xq of synchronous machine. |  |  |  |  |
| 34 |  |
| 35 |  |
| 36 |  |
| 11th | 37 |  | 10 | To calculate regulation by ZPF method. |  |  |  |  |
| 38 |  |
| 39 |  |
| 40 |  |
| 12th | 41 |  | 11 | To conduct load test to determine performance characteristics of the induction motor. |  |  |  |  |
| 42 |  |
| 43 |  |
| 44 |  |
| 13th | 45 |  | 12 | To study the parallel operation of synchronous generator. |  |  |  |  |
| 46 |  |
| 47 |  |
| 48 |  |
| **14th** | **2nd Minor test** | | | |  |  |  |  |
| 15th | 49 |  | 13 | 2nd Internal viva |  |  |  |  |
|  | 50 |  |
|  | 51 |  |
|  | 52 |  |