**Name of the Faculty: Mr. Parveen Kamboj Discipline : Electrical Engg.**

**Semester : 5th**

**Subject : Electrical Machines-II**

**Duration:(from 15 September, 2022 to 16 Jan,2023) Work load (Lecture/Practical) per week (in Hours):Lecture-04,Practical -02**

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| **work ing Wee k** | **Day** | **Topic** | **Practical** |
| 1 | 1 | Introduction Of The Subject, COs,Its Need, Applications | **G1**-Determination of efficiency (a) no load test and blocked rotor test on an induction motor (b)  direct loading of an induction motor. |
| 2 | Unit 1.Introduction of Three Phase Induction Motor | **G2-**Determination of efficiency (a) no load test and blocked rotor test on an induction motor (b) direct loading of an induction motor. |
| 3 | Silent constructional features of Squirrel cage Three Phase Induction Motor |  |
| 4 | Silent constructional features of Slip Ring  Three Phase Induction Motor |  |
| 2 | 1 | Principal of Operation | **G1-**Determination of effect of rotor resistance on torque speed curve of an induction motor. |
| 2 | Slip and its Significance | **G2-**Determination of effect of rotor resistance  on torque speed curve of an induction motor. |
| 3 | Locking of rotor and stator fields |  |
| 4 | Rotor resistance and inductance |  |
| 3 | 1 | rotor EMF and rotor Current production of Mechanical Power | revision |
| 2 | Torque development in a 3 phase IM,  Relationship between rotor copper losses , slip and rotor input power |  |
| 3 | Power flow diagram of a Induction Motor |  |
| 4 | Factors determining the torque |  |
| 4 | 1 | Torque-slip Curve, stable and unstable zones | copy checking and viva |
|  | 2 | Effect of rotor resistance upon the Torque-  slip Curve |  |
|  | 3 | Double cage rotor motor and its applications |  |
|  | 4 | Starting of Three Phase Induction Motor  DOL |  |

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| 5 | 1 | Star-delta and Auto transformer | **G1-**Observe the performance of a ceiling fan without capacitor  Determine the effect of change in capacitor on the performance of 1-phase induction motor and reverse the direction of motor. |
|  | 2 | Causes of Low power factor of induction  motors | **G2-**Observe the performance of a ceiling fan  without capacitor  Determine the effect of change in capacitor on the performance of 1-phase induction motor and reverse the direction of motor. |
|  | 3 | Testing of Three Phase Induction Motor |  |
|  | 4 | No-Load and Blocked rotor test |  |
| 6 | 1 | Efficiency of Three Phase Induction Motor | revision |
|  | 2 | Method of speed control of Three Phase  Induction Motor |  |
|  | 3 | Harmonics and its effect |  |
| 4 | Cogging and crawling in Induction Motors |  |
| 7 | 1 | Specifications and ratings of Three Phase  Induction Motor/sessional 1/class test | Copy Checking and viva |
| 2 | Unit 2.Introduction of Single phase Induction Motor |  |
| 3 | Construction, characteristics and  specifications |  |
| 4 | Applications of Single phase Induction  Motor |  |
| 8 | 1 | Nature of field produced in Single phase Induction Motor  -Double field revolving theory | **G1-**To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed. |
| 2 | Split phase induction Motors | **G2-**To plot relationship between no load  terminal voltage and excitation current in a synchronous generator at constant speed. |
| 3 | Capacitor start, Capacitor Run and  Capacitor Start and Run Motors, Shaded Pole Motors |  |
| 4 | Alternating current series motors and  universal Motors-  Construction, working principle, operation and applications |  |
| 9 | 1 | Single phase Synchronous Motors | **G1-**Determination of the relationship between  the voltage and load current of an Alternator, keeping excitation and speed constant. |
| 2 | Reluctance Motor | **G2-**Determination of the relationship between  the voltage and load current of an Alternator, keeping excitation and speed constant. |
| 3 | Hysteresis Motor |  |

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|  | 4 | Unit 3.Introduction of Synchronous Machines |  |
| 10 | 1 | Main Constructional features of  Synchronous Machines | copy checking and viva |
| 2 | Production of Rotating magnetic fields  in three phase windings |  |
| 3 | Generation of Three phase EMF |  |
| 4 | Concept of Distribution factor and coil Span factor and EMF equation |  |
| 11 | 1 | Armature Reaction at unity, lag and  lead Power factor | **G1-**To find the efficiency and regulation of  Alternator from open & short circuit Test. |
| 2 | Equivalent Circuit diagram of Synchronous Machines/Sessional 2/Class  test | **G2-**To find the efficiency and regulation of Alternator from open & short circuit Test. |
| 3 | Concept of voltage regulation |  |
| 4 | Determination of Voltage regulation by Synchronous Impedance Method | **G1-**Determination of the effect of variation of excitation on performance of a synchronous Motor. |
| 12 | 1 | Operation of single Synchronous Machine independently supplying a load | **G2-**Determination of the effect of variation of excitation on performance of a synchronous  Motor. |
| 2 | Concept of infinite bus bar | **G1 -copy checking and viva** |
| 3 | Need and necessary conditions of  parallel operation of alternators | **G2-**copy checking and Viva |
| 4 | Synchronizing an Alternator with bus bars. |  |
| 13 | 1 | Operation of Synchronous Machines  as a Motor-its starting methods |  |
| 2 | Effect of change in Excitation of a Synchronous Motor | revision |
| 3 | V-Curves |  |
| 4 | Concept of Synchronous Condenser |  |
| 14 | 1 | Concept and cause of Hunting and its  prevention |  |
| 2 | Specification ,ratings and cooling of Synchronous Machines | viva |
| 3 | Application of Synchronous Machines |  |
| 4 | Introduction of Special Purpose machines |  |
| 15 | 1 | Construction, working principle and  applications of Linear Induction Motors | viva |
| 2 | Construction, working principle and applications of Stepper motors |  |
| 3 | Construction, working principle and  applications of AC Servomotors |  |
| 4 | Construction, working principle and applications of Submersible Motors |  |
| 16 |  | sessionaltest |  |
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