


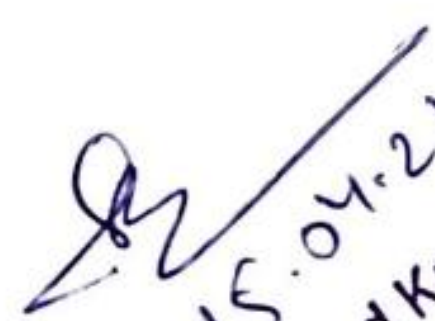
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| Discipline: ELECTRICAL ENGG | Semester: 4TH | Name of the Teaching Faculty: J BINOD KUMAR |
| Subject: ENERGY CONVERSION -I | No. of Days/per week class allotted: 05 | Semester From Date: 15/04/21 To Date: 13/08/21 No. of Weeks 15 |
| Week | Class Day | Theory/Practical Topics |
| 1 st | 01 | Operating principle of generator |
| | 02 | Constructional features of DC machine. Yoke, Pole & field winding, Armature, Commutator |
| | 03 | Armature winding, back pitch, Front pitch, Resultant pitch and commutator- pitch. |
| | 04 | Simple Lap and wave winding, Dummy coils. |
| | 05 | Revision tutorial |
| 2 nd | 01 | Different types of D.C. machines (Shunt, Series and Compound) |
| | 02 | Derivation of EMF equation of DC generators. (Solve problems) |
| | 03 | Losses and efficiency of DC generator. Condition for maximum efficiency and numerical problems |
| | 04 | Armature reaction in D.C. machine |
| | 05 | Revision tutorial |
| 3 rd | 01 | Commutation and methods of improving commutation. |
| | 02 | Role of inter poles and compensating winding in commutation. |
| | 03 | Characteristics of D.C. Generators |
| | 04 | Application of different types of D.C. Generators. |
| | 05 | Revision tutorial |
| 4 th | 01 | Concept of critical resistance and critical speed of DC shunt generator |
| | 02 | Conditions of Build-up of emf of DC generator. |
| | 03 | Parallel operation of D.C. Generators. |
| | 04 | Uses of D.C generators. |
| | 05 | Revision tutorial |
| 5 th | 01 | Uses of D.C generators. |
| | 02 | Basic working principle of DC motor |
| | 03 | Significance of back emf in D.C. Motor |
| | 04 | Voltage equation of D.C. Motor and condition for maximum power output(simple problems) |
| | 05 | Revision tutorial |
| 6 th | 01 | Derive torque equation |
| | 02 | Numerical problems |
| | 03 | Characteristics of shunt, series and compound motors and their application. |
| | 04 | Starting method of shunt, series and compound motors. |
| | 05 | Revision tutorial |
| 7 th | 01 | Speed control of D.C shunt motors by Flux control method. |


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| | | Armature voltage Control method |
| | 02 | Numerical problems |
| | 03 | Speed control of D.C. series motors by Field Flux control method, Tapped field method and series-parallel method |
| | 04 | Determination of efficiency of D.C. Machine by Brake test method(solve numerical problems) |
| | 05 | Revision tutorial |
| 8 th | 01 | Numerical problems |
| | 02 | Determination of efficiency of D.C. Machine by Swinburne's Test method(solve numerical problems) |
| | 03 | Losses, efficiency and power stages of D.C. motor(solve numerical problems) |
| | 04 | Uses of D.C. motors |
| | 05 | Revision tutorial |
| 9 th | 01 | Working principle of transformer. |
| | 02 | Constructional feature of Transformer. Arrangement of core & winding in different types of transformer. |
| | 03 | Brief ideas about transformer accessories such as conservator, tank, breather, and explosion vent etc. |
| | 04 | Explain types of cooling methods |
| | 05 | Revision tutorial |
| 10 th | 01 | Procedures for Care and maintenance. |
| | 02 | EMF equation of transformer. |
| | 03 | Ideal transformer voltage transformation ratio |
| | 04 | Operation of Transformer at no load, on load with phasor diagrams. |
| | 05 | Revision tutorial |
| 11 th | 01 | Equivalent Resistance, Leakage Reactance and Impedance of transformer |
| | 02 | Draw phasor diagram of transformer on load, with winding Resistance and Magnetic leakage with using upf, leading pf and lagging pf load. |
| | 03 | Equivalent circuit |
| | 04 | Numerical problems. |
| | 05 | Revision tutorial |
| 12 th | 01 | Approximate & exact voltage drop calculation of a Transformer. |
| | 02 | Regulation of transformer. |
| | 03 | Different types of losses in a Transformer. Explain Open circuit and Short Circuit test |
| | 04 | Numerical problems |
| | 05 | Revision tutorial |
| 13 th | 01 | Efficiency, efficiency at different loads and power factors, condition for maximum efficiency (solve problems) |
| | 02 | Explain All Day Efficiency (solve problems) |
| | 03 | Determination of load corresponding to Maximum efficiency. |
| | 04 | Parallel operation of single phase transformer |


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| | 05 | Revision tutorial |
| 14 th | 01 | Constructional features of Auto transformer. Working principle of single phase Auto Transformer. |
| | 02 | Comparison of Auto transformer with an two winding transformer (saving of Copper) |
| | 03 | Uses of Auto transformer. Explain Tap changer with transformer (on load and off load condition) |
| | 04 | Current Transformer and Potential Transformer |
| | 05 | Revision tutorial |
| 15 th | 01 | Current Transformer and Potential Transformer |
| | 02 | Ratio error, Phase angle error, |
| | 03 | Burden. |
| | 04 | Uses of C.T. and P.T |
| | 05 | Revision tutorial |


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