**Lesson Plan**

Name of faculty : Er. Puneet Chawla

Discipline : Electrical Engineering

Semester : 6th

Subject : Power Electronics-II

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Theory | **Date of Actual covered**  | **Signatures** |
| Lecture Day | Topic (Including assignment / Test) | **Concerned teacher**  | **HOD**  | **DP**  |
| **Unit-I** |
| 1st | 1 | Introduction to subject |  |  |  |  |
| 2 | DC to DC CONVERTER: Classification of choppers, Principle of operation |
| 3 | Step up chopper, Steady state  |
| 4 | Steady state analysis of Class A choppers under different load conditions  |
| 2nd | 5 | Steady state analysis of Class A choppers under different load conditions  |  |  |  |  |
| 6 | Switching mode regulator: Buck, Boost  |
| 7 | Switching mode regulator: Buck-boost & Cuk regulators |
| 8 | Current commutated chopper |
| 3rd | 9 | Current commutated chopper, Voltage commutated chopper |  |  |  |  |
| 10 | Voltage commutated chopper, Output voltage control techniques |
| 11 | One, two and four quadrant choppers |
| 12 | MOSFET and transistor based choppers |
| **Unit-II** |
| 4th | 13 | DC to AC CONVERTER: Classification |  |  |  |  |
| 14 | Basic series inverter |
| 15 | Improved series inverter |
| 16 | Parallel inverter |
| 5th | 17 | Single phase voltage source inverter, Steady state analysis |  |  |  |  |
| 18 |  Modified Mc-murray inverter |
| 19 |  Modified Mc-murray Bedford inverter |
| 20 | Voltage control in single phase inverters |
| 6th | 21 | PWM inverters, Reduction of harmonics |  |  |  |  |
| 22 | Current source Inverter |
| 23 | Three phase bridge inverter |
| 24 | Three phase bridge inverter |
| **7th** | **1st Minor Test** |
| **Unit-III** |
| 8th  | 25 | INVERTERS **:** Basic circuit |  |  |  |  |
| 26 | 120 degree mode conduction schemes |
| 27 | 180 degree mode conduction schemes |
| 28 | Modified McMurray – Bedford half bridge inverters |
| 9th | 29 | Modified McMurray – Bedford half bridge inverters |  |  |  |  |
| 30 | Modified McMurray – Bedford full bridge inverters |
| 31 | Modified McMurray – Bedford full bridge inverters |
| 32 | Brief description of series & parallel inverter |
| 10th | 33 | Brief description of series & parallel inverter |  |  |  |  |
| 34 | Brief description of series & parallel inverter |
| 35 | Transistor based inverters |
| 36 | MOSFET based inverters |
| **Unit-IV** |
| 11th | 37 | POWER SUPPLIES : Introduction  |  |  |  |  |
| 38 | Switched mode D.C. and A.C. power supplies |
| 39 | Switched mode D.C. and A.C. power supplies |
| 40 | Applications : dielectric and induction heating |
| 12th | 41 | Block diagram of D.C. motor speed control |  |  |  |  |
| 42 | DRIVES: Introduction to electric drives |
| 43 | DRIVES: Introduction to electric drives |
| 44 | Drives: Converter fed D.C. drives |
| 13th | 45 | Drives: Chopper fed D.C. drives |  |  |  |  |
| 46 | AC drives: Stator voltage control |
| 47 | V/f control |
| 48 | Rotor resistance control |
| **14th** | **2nd Minor test** |
| 15th | 49 | Static Scherbius system |  |  |  |  |
|  | 50 | Static Kramer systems |
|  | 51 | Old university paper discussion  |
|  | 52 | Revision |

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|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Practical** | **Date of Actual covered**  | **Signature** |
|  |  |  | **Practical** **Day** | **Topic** | **Concerned teacher**  | **HOD**  | **DP** |
| 1st | 1 |  | 1 | Experiment to find the average output voltage of step up MOSFET based chopper circuit |  |  |  |  |
| 2 |  |  |  |  |  |
| 3 |  |  |  |  |  |
| 4 |  |  |  |  |  |
| 2nd | 5 |  | 2 | Experiment to plot the graph between average output voltage versus speed of DC motor using Chopper circuit.  |  |  |  |  |
| 6 |  |  |  |  |  |
| 7 |  |  |  |  |  |
| 8 |  |  |  |  |  |
| 3rd | 9 |  | 3 | Experiment to find output voltage across switched mode regulators: Buck, Boost, buck-boost, cuk regulator.  |  |  |  |  |
| 10 |  |  |  |  |  |
| 11 |  |  |  |  |  |
| 12 |  |  |  |  |  |
| 4th | 13 |  | 4 | Experiment to draw the voltage waveform across thyristor, capacitor & output voltage of Jones chopper.  |  |  |  |  |
| 14 |  |  |  |  |  |
| 15 |  |  |  |  |  |
| 16 |  |  |  |  |  |
| 5th | 17 |  | 5 | Experiment to draw the voltage waveform across thyristor, capacitor & output voltage of Morgan’s chopper.  |  |  |  |  |
| 18 |  |  |  |  |  |
| 19 |  |  |  |  |  |
| 20 |  |  |  |  |  |
| 6th | 21 |  | 6 | Experiment to find the output voltage and frequency of a 1-phase series inverter by varying R,L,C component |  |  |  |  |
| 22 |  |  |  |  |  |
| 23 |  |  |  |  |  |
| 24 |  |  |  |  |  |
| **7th** |  **1st Minor Test** |  |  |  |  |
| 8th  | 25 |  | 7 | Experiment to draw the waveforms of parallel inverter  |  |  |  |  |
| 26 |  |  |  |  |  |
| 27 |  |  |  |  |  |
| 28 |  |  |  |  |  |
| 9th | 29 |  | 8 | Experiment to draw the waveform of output voltage of 3-phase to 1-phase cycloconverter.  |  |  |  |  |
| 30 |  |  |  |  |  |
| 31 |  |  |  |  |  |
| 32 |  |  |  |  |  |
| 10th | 33 |  | 9 | Experiment to find rms value of output voltage by delta angle of 1-phase IGBT based PWM inverter in MPWM technique .  |  |  |  |  |
| 34 |  |  |  |  |  |
| 35 |  |  |  |  |  |
| 36 |  |  |  |  |  |
| 11th | 37 |  | 10 | Experiment to find rms value of output voltage by delta angle of 1-phase IGBT based PWM inverter in SPWM technique . |  |  |  |  |
| 38 |  |  |  |  |  |
| 39 |  |  |  |  |  |
| 40 |  |  |  |  |  |
| 12th | 41 |  | 11 | Experiment to study the operation of Dual converter.  |  |  |  |  |
| 42 |  |  |  |  |  |
| 43 |  |  |  |  |  |
| 44 |  |  |  |  |  |
| 13th | 45 |  | 12 | Experiment to study the reduction of harmonics in inverter using phase displacement control technique.  |  |  |  |  |
| 46 |  |  |  |  |  |
| 47 |  |  |  |  |  |
| 48 |  |  |  |  |  |
| **14th** | **2nd Minor test** |  |  |  |  |
| 15th | 49 |  | 13 | Viva-Voce  |  |  |  |  |
|  | 50 |  |  |  |  |  |
|  | 51 |  |  |  |  |  |
|  | 52 |  |  |  |  |  |