# Detailed Teaching Plan

| Lecture No. | Unit No. | Topic to be covered | Books & Page Nos. | Notes Page Nos. | Slide Nos. | A/V Resource |
|---|---|---|---|---|---|---|
| 1 | 1 | Silicon Controlled Rectifier (SCR): Construction | | | | |
| 2 | 1 | Principle of operation of SCR | | | | |
| 3 | 1 | Two transistor analogy, | | | | |
| 4 | 1 | V-I characteristics of SCR with different modes | | | | |
| 5 | 1 | Rating and Protection: over voltage, over current, snubber circuit | | | | |
| 6 | 1 | Series and parallel operation of SCRs: String efficiency | | | | |
| 7 | 1 | DIAC : Construction, Operation, characteristic curves and applications | | | | |
| 8 | 1 | TRIAC: Construction, Operation, characteristic curves and applications | | | | |
| 9 | 1 | Power BJT, MOSFET, IGBT: Construction, Operation, characteristic curves and applications | | | | |
| 10 | 1 | IGBT: Construction, Operation, characteristic curves and applications | | | | |
| 11 | 3 | Single phase half wave controlled rectifier with Resistive load | | | | |
| 12 | 3 | Single phase half wave controlled rectifier with Resistive load (Derivation) | | | | |
| 13 | 3 | Single phase full wave controlled rectifier with Resistive load | | | | |

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|---|---|---|---|---|---|---|
| 14 | 3 | Single phase full wave controlled rectifier with Resistive load (Derivation) | | | | |
| 15 | 3 | Single phase half wave controlled rectifier with RL load | | | | |
| 16 | 3 | Single phase half wave controlled rectifier with RL load (Derivation) | | | | |
| 17 | 3 | Single phase full wave controlled rectifier with RL load | | | | |
| 18 | 3 | Single phase full wave controlled rectifier with RL load (Derivation) | | | | |
| 19 | 3 | Effect of free-wheel diode in single phase full converter | | | | |
| 20 | 3 | Three-phase half wave-controlled rectifier with R load | | | | |
| 21 | 3 | Three-phase half wave-controlled rectifier with RL load | | | | |
| 22 | 2 | Need for commutation in SCR | | | | |
| 23 | 2 | Principle of Natural and Forced commutations | | | | |
| 24 | 2 | Class A commutation in SCR | | | | |
| 25 | 2 | Class B commutation in SCR | | | | |

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|---|---|---|---|---|---|---|
| 26 | 2 | Class D commutation in SCR | | | | |
| 27 | 2 | Class E commutation in SCR | | | | |
| 28 | 2 | Chopper | | | | |
| 29 | 2 | Step Up Chopper | | | | |
| 30 | 2 | Step Down Chopper | | | | |
| 31 | 2 | Simple numerical on Converters: duty ratio calculation, | | | | |
| 32 | 4 | Inverter: Working principle, types-Voltage Source Inverter, Current Source Inverter. | | | | |
| 33 | 4 | Half Bridge Inverter | | | | |
| 34 | 4 | Full Bridge Inverter | | | | |
| 35 | 4 | PWM Inverter | | | | |
| 36 | 4 | Cycloconverter , Application | | | | |
| 37 | 4 | Step Up Cycloconverter (Mid Point Type) | | | | |

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|---|---|---|---|---|---|---|
| 38 | 4 | Step Down Cycloconverter (Mid Point Type) | | | | |
| 39 | 4 | Derivation | | | | |
| 40 | 4 | Step Up Cycloconverter (bridge Type) | | | | |
| 41 | 5 | Step Down Cycloconverter (bridge Type) | | | | |
| 42 | 5 | Single phase AC voltage controller: Working principle and its applications | | | | |
| 43 | 5 | Single phase half wave AC voltage controller with R load | | | | |
| 44 | 5 | Single phase half wave AC voltage controller with R-L load | | | | |
| 45 | 5 | Single phase Full wave AC voltage controller with R load | | | | |
| 46 | 5 | Single phase full wave AC voltage controller with R-L load | | | | |
| 47 | 5 | Significance of UPS, Block diagram of UPS, function of each block, types: On-line | | | | |
| 48 | 5 | Block diagram of Off- line UPS. | | | | |
| 49 | 5 | SMPS: Block diagram, principle of operation, | | | | |

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|---|---|---|---|---|---|---|
| 50 | 5 | Advantages and disadvantages and applications of SMPS | | | | |
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Signature of Lecturer

Signature of HOD