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| **Lesson plan** |
| **Name of Faculty** | Sh. Navneet Kaushik |
| **Discipline** | Electrical Engineering |
| **Semester** | 3rd |
| **Subject** | Analog & Digital Electronics |
| **Teaching Duration** | Week (From 1st Sept. 2023 to 15th Dec. 2023) Theory: 3; Practical: 2 |
| **Week** | **Lecture****Day** | **Theory(3 Hours/Week)** | **Practical(2Hours each Group)** |
| 1st | Day1 | Semiconductor Devices: | 1. To Plot V-I characteristics of a PN junction diode.
2. To Plot V-I characteristics of a Zener diode.
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| Day2 | Concept of insulators, conductors and semiconductors |
| Day3 | Intrinsic and extrinsic semiconductor |
| 2nd | Day1 | P and N type semiconductor and their conductivity | 1. Observe the output of waveform:
2. Half-wave rectifier circuit using one diode
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| Day2 | Effect of temperature on conductivity of intrinsic semiconductor etc. |
| Day3 | PN junction diode, |
| 3rd | Day1 | mechanism of current flow in PN junction | File checking/Problem disscusion |
| Day2 | forward and reverse biased PN junction, potential barrier, |
| Day3 | drift and diffusion currents, depletion layer. |
| 4th | Day1 | V-Icharacteristics of diodes. | 1. Full-wave rectifier circuit using two diodes
2. Observe the output of waveform of Bridge- rectifier circuit using four diodes.
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| Day2 | Diode as half-wave, |
| Day3 | full wave and bridge rectifiers, |
| 5th | Day1 | Peak Inverse Voltage, | 1. Plotting of input and output characteristics and calculation of parameters of transistors in

CE configuration.1. Plotting of input and output characteristics and calculation of parameters of transistors in

CB configuration. |
| Day2 | rectification efficiencies and ripple factor calculations, |
| Day3 | Concept of filters, Types of diode, |
| 6th | Day1 | characteristics and applications of Zener diodes. | File checking/Problem disscusion |
| Day2 | Revision/class test |
| Day3 | Bipolar-Transistors and Field Effect Transistors: Concept of a bipolar transistor, |
| 7th | Day1 | PNP and NPN transistors. | 1. Plotting of V-I characteristics of a FET.
2. Basic logic operations of AND, OR, NOT gates.
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| Day2 | CB configuration of a transistor |

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|  | Day3 | CE configuration of a transistor |  |
| 8th | Day1 | CC configuration of a transistor | 1. Verification of truth tables for NAND, NOR and Exclusive OR (EX-OR) and Exclusive

NOR (EX-NOR) gates.1. Realization of logic functions with the help of NAND or NOR gates.
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| Day2 | Transistor as an amplifier in CE Configuration, |
| Day3 | Current amplification factors, |
| 9th | Day1 | Comparison of CB, CE and CC Configurations. | File checking/Problem disscusion |
|  | Day2 | Construction, operation and characteristics of FETs. |
| Day3 | FET as an amplifier. |
| 10th | Day1 | Construction,operation and characteristics of a MOSFET. | 1. To design a half adder using XOR and NAND gates and verification of its operations.
2. Construction of a fu Construction of a full adder circuit using XOR and NAND gates and

verify its operation |
| Day2 | Comparison of JFET, MOSFET and BJT |
| Day3 | Revision/class test |
| 11th | Day1 | Digital Electronics: Distinction between analog and digital signal. | 1. Verification of truth table for IC flip-flops (At least one IC each of D latch, D flip-flop,

JK flip-flops).1. Verification of truth table for encoder and decoder ICs.
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| Day2 | Decimal, Binary number system. |
| Day3 | octal and hexadecimal |
| 12th | Day1 | Conversion from decimal and hexadecimal to binary and vice- versa. | File checking/Problem disscusion |
| Day2 | Binary addition and subtraction. |
| Day3 | Definition, symbols and truth tables of Logic gates (AND, OR, XOR). |
| 13th | Day1 | Definition, symbols and truth tables of Logic gates (NOT, NAND, | 17. Verification of truth table for Mux and De-Mux. |
| Day2 | Revision/class test |
| Day3 | **Sequential and Combinational Circuit:** Sequential Circuits such as Half adder, Full adder, |
| 14th | Day1 | Mux, De-Mux, | File checking/Problem disscusion |
| Day2 | Encoder and Decoder. |
| Day3 | Combinational Circuits like Latch, Flip Flops, |
| 15th | Day1 | shift registers and counters. | Internal Examination/Viva Voce |
| Day2 | A/D and D/A Converters and its Applications. |
| Day3 | Revision/class test |