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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. |
| 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 |
| 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-I  characteristics of diodes. | 1. Full-wave rectifier circuit using two diodes 2. Observe the output of waveform of Bridge- rectifier circuit using four diodes. |
| 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. |
| 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. |
| 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. |
| 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 |