|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic (including assignment / test)** | **Practical Day** | **Topic** |
| 1 | 1st Day | Semiconductors and Diodes: Electrons- free and valence. Conductors, Insulators, and Semiconductors- definition & energy band diagrams. Properties of semiconductors. | 1st | Familiarity with working knowledge of the following  Instruments. (a) CRO (b)  Multimeter (c) Function generator (d) Regulated power supply (e) Active passive  components (f) Bread Board |
| 2nd Day | Meaning of  Hole current, electron-hole pairs, recombination, doping, acceptor and donor impurities. Intrinsic and Extrinsic, N and P type semiconductors. | Familiarity with working knowledge of the following  Instruments. (a) CRO (b)  Multimeter (c) Function generator (d) Regulated power supply (e) Active passive  components (f) Bread Board |
| Familiarity with working knowledge of the following  Instruments. (a) CRO (b)  Multimeter (c) Function generator (d) Regulated power supply (e) Active passive  components (f) Bread Board |
| 2 | 3rd Day | Diode- formation, depletion region, VI Characteristics, ratings, types and applications. | 2nd | Study of V-I Characteristics of a Diode. |
| 4th Day | Zener diode- reverse bias characteristics, voltage regulation, shunt voltage regulator, and applications. | Study of V-I Characteristics of a Diode. |
| Study of V-I Characteristics of a Diode. |
| 3 | 5th Day | Varistor and Thermistor working and applications. | 3rd | 1.Study and draw the characteristics of half wave and full wave rectifiers.  2.Study and draw the  characteristics of rectifier filter circuit. |
| 6th Day | **Revision of Unit-1 & Assignment-1** | 1.Study and draw the characteristics of half wave and full wave rectifiers.  2.Study and draw the  characteristics of rectifier filter circuit. |
| 1.Study and draw the characteristics of half wave and full wave rectifiers.2.Study and draw the  characteristics of rectifier filter circuit. |
| 4 | 7th Day | **Sessional Exam-1st(Tentative)** | 4th | Study of Clipping & Clamping circuit. |
| 8th Day | Transistors and MOSFETs: Transistors-  definition, terminals, types, symbols, formation of NPN  and PNP, ratings. | Study of Clipping & Clamping circuit. |
| Study of Clipping & Clamping circuit. |
| 5 | 9th Day | Transistor biasing- definition, importance, list types, stabilisation, thermal  runaway, heat sink, and voltage divider method. | 5th | 1. Study zener diode characteristics.  2.Study zener diode as voltage regulator. |
| 10th Day | List configurations and applications. Alpha and Beta- definitions, relation. CE input and output characteristics- cut off, saturation, and active regions. Transistor as a switch. List applications. | 1. Study zener diode characteristics.  2.Study zener diode as voltage regulator. |
| 1. Study zener diode characteristics.  2.Study zener diode as voltage regulator. |
| 6 | 11th Day | FET- definition, types. MOSFET- definition, types, symbols. N type enhancement mode- construction, working, characteristics, switch. | 6th | Study the characteristics of transistor in Common Base configuration. |
| 12th Day | List  applications and ratings. Differentiate BJT and MOSFET. | Study the characteristics of transistor in Common Base configuration. |
| Study the characteristics of transistor in Common Base configuration. |
| 7 | 13th Day | Rectifiers, filters and regulators: Regulated power supply- block diagram and applications. | 7th | Plot and study the input and output characteristics of BJT in common emitter configuration. |
| 14th Day | Rectifiers- definition, half wave, centre tapped and bridge full wave rectifier, efficiency, ripple factor, PIV, ratings. | Plot and study the input and output characteristics of BJT in common emitter configuration. |
| Plot and study the input and output characteristics of BJT in common emitter configuration. |
| 8 | 15th Day | Filters- definition, necessity, C and PI filters,  Regulator-definition, working  of 7805, operating voltages- 7809, 7812, 7905,  7912. | 8th | Graphical determination of small signal hybrid parameter of BJT. |
| 16th Day | **Revision of Unit-2 & 3 & Assignment-2** | Graphical determination of small signal hybrid parameter of BJT. |
| Graphical determination of small signal hybrid parameter of BJT. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Theory** | | **Practical** | |
| **Lecture Day** | **Topic (including assignment / test)** | **Practical Day** | **Topic** |
| 9 | 17th Day | **Sessional Exam-2nd(Tentative)** | 9th | Study and draw the characteristics of FET in common source configuration |
| 18th Day | Amplifiers and Oscillators: Amplifier- definition, faithful amplification, classification based on configuration, power, and frequency. | Study and draw the characteristics of FET in common source configuration |
| Study and draw the characteristics of FET in common source configuration |
| 10 | 19th Day | Transistor CE amplifier with biasing. Working of  class A,  B, C, and Push pull amplifier. | 10th | Study characteristics of SCR. |
|  | 20th Day | **dB, frequency** | Study characteristics of SCR. |
| Study characteristics of SCR. |
| 11 | 21st Day | Feed back- definition, types, advantages and disadvantages, applications. | 11th | Study of characteristics of DIAC. |
| 22nd Day | Oscillators-  definition, classification, LC tank circuit, criteria. | Study of characteristics of DIAC. |
| Study of characteristics of DIAC. |
| 12 | 23rd Day | RC phase shift and crystal oscillator- working, applications. CRT- construction, working and applications. | 12th | Plot V-I characteristic of TRIAC. |
| 24th Day | OP-AMP and Timers: OPAMP– definition, block diagram, operation, characteristics,  applications, μA 741 pin diagram. | Plot V-I characteristic of TRIAC. |
| Plot V-I characteristic of TRIAC. |
| 13 | 25th Day | Definitions of virtual ground, CMRR and Slew rate. | 13th | Study and draw the characteristics of FET in common drain configuration. |
| 26th Day | OPAMP  applications– inverting, integrator, differentiator, summer, voltage follower, and comparator. | Study and draw the characteristics of FET in common drain configuration. |
| Study and draw the characteristics of FET in common drain  configuration. |
| 14 | 27th Day | Filters- definition, Working- low pass, high pass passive and active filters, applications. | 14th | Study the Series and Shunt Voltage Regulator. |
| 28th Day | Timers–block diagram, pin diagram of 555, duty cycle, time constant, applications. Multi-vibrators- Astable and monostable using 555. | Study the Series and Shunt Voltage Regulator. |
| Study the Series and Shunt Voltage Regulator. |
| 15 | 29th Day | **Revision of Unit-4 & 5 & Assignment-3** | 15th | Study of frequency response of active filters HP, LP & BP. |
| 30th Day | **Sessional Exam-3rd (Tentative)** | Study of frequency response of active filters HP, LP & BP. |
| Study of frequency response of active filters HP, LP & BP. |