**23EC21P1-ELECTRONIC DEVICES & CIRCUITS LAB**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CourseCategory:** | | Professional Core | | **Credits:** | 1.5 |
| **CourseType:** | | Practical | | **Lecture-Tutorial-**  **Practical:** | 0-0-3 |
| **Prerequisite:** | | Electronic Devices&Circuits | | **Sessional Evaluation:Univ.ExamEvaluation:**  **TotalMarks:** | 30  70  100 |
| **CourseObjectives** | | * Verify the theoretical concepts practically fromall the experiments. * Analyse the characteristics of Diodes,BJT,MOSFET,UJT. * Design the amplifier circuits from the given specifications. * Model the electronic circuits using tools such as PSPICE/Multisim. | | | |
| **CourseOutcomes** | Upon successful completion of the course,the students will be able to: | | | | |
| CO1 | | Understand the characteristics and applications of basic electronic devices.(L2) | | |
| CO2 | | Plot the characteristics of electronic devices.(L3) | | |
| CO3 | | Analyze various biasing circuits and electronic circuits as amplifiers(L4). | | |
| CO4 | | Design MOSFET/BJT based amplifiers for the given specifications.(L5) | | |
| CO5 | | Simulate all circuitsin PSPICE/Multisim.(L5). | | |
| **CourseContent**  12 .Design a small signal amplifier using BJT (common emitter) for the given specifications .Draw the frequency response and find the bandwidth.  **Note:**Software Tools like Multisim/Pspice or Equivalent,  DC Powersupplies,Multimeters,DCAmmeters,DCVoltmeters,ACVoltmeters,CROs,andallthe requiredactivedevices. | **LIST OF EXPERIMENTS:**(Implement/**Executeany 10 experiments**).   1. Verify various clipping and clamper circuits using PN junction diode and draw the suitable graphs. 2. Study and draw the Volt Ampere characteristics of UJT and determine η,IP,Iv, VP,&Vv from the experiment. 3. Verification of the input and output characteristics of BJT in Common Emitter configuration experimentally and find required parameters from the graphs. 4. Study and draw the input and output characteristics of BJT in Common Base configuration experimentally and determine required parameters from the graphs. 5. Verification of the input and output characteristics of BJT in Common Collector configuration experimentally and find required parameters from the graphs. Study and draw the V-I characteristics of JFET experimentally. 6. Study and draw the ***output*** and ***transfer*** characteristics of MOSFET (Enhance mode) in Common Source Configuration experimentally. Find ***Threshold voltage (VT) ,gm, & K*** from the graphs. 7. Study and draw the ***output*** and ***transfer*** characteristics of MOSFET (Depletion mode) or JFET in Common Source Configuration experimentally .Find ***IDSS, gm, &VP*** from the graphs. 8. Design and analysis of voltage-divider bias/self-bias circuit using BJT. 9. Design and analysis of self-bias circuit using MOSFET. 10. Design a suitable circuit for switch using MOSFET/BJT. 11. Design a small signal amplifier using MOSFET (common source) for the given specifications .Draw the frequency response and find the bandwidth. | | | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Contribution of Course Outcomes towards achievement of Program Outcomes (3-High, 2-Medium, 1-Low) | | | | | | | | | | | | | | |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| CO1 | 3 | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | - | 3 | 2 |
| CO2 | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | - | 3 | 2 |
| CO3 | 3 | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | - | 3 | 2 |
| CO4 | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 2 | 3 | 2 |
| CO5 | 3 | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | 2 | 3 | 2 |