



**DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL,
SONEPAT, HARYANA-131039**

**APPARATUS / SOFTWARES FOR B. TECH. IN ELECTRICAL & ELECTRONICS
ENGINEERING (4 YEARS)**

| | INFRASTRUCTURE | REQUIRED | AVAILABLE | DEFICIENCY |
|--|--|-----------------|-----------|------------|
| List of Labs / Equipments / Softwares | | | | |
| S. No. | Name of Equipment / Softwares | Quantity | | |
| 2nd Year Labs: Network Theory-I Lab, Electrical Measurements & Measuring Instruments Lab, Electrical Workshop Lab, Electrical Machines-I Lab, Analog Electronics Lab, Digital Electronics Lab, Principles of Communication Lab, Numerical Methods & Optimization Techniques Lab, General Proficiency Lab | | | | |
| Name of the lab: EE-223-F: Network Theory-I Lab | | | | |
| 1. | Function generators | 4 | | |
| 2. | Cathode Rays Oscilloscopes | 4 | | |
| 3. | D C Power Supplies | 4 | | |
| 4. | Bread Boards | 4 | | |
| 5. | Digital multi-meters | 4 | | |
| 6. | Capacitance Boxes | 4 | | |
| 7. | Inductance Boxes | 4 | | |
| 8. | Resistance Boxes | 4 | | |
| Name of the lab: EE-211-F: Electrical Measurements & Measuring Instruments Lab | | | | |
| 9. | WATT meters | 5 | | |
| 10. | Energy meters | 2 | | |
| 11. | DqArsonoval Galvanometers | 2 | | |
| 12. | Multi-meters | 5 | | |
| 13. | Ammeters different ranges | 5 | | |
| 14. | Voltmeters different ranges | 5 | | |
| 15. | De Sauty's bridge with all necessary equipment | 1 | | |
| 16. | Maxwell's bridge with all necessary equipment | 1 | | |
| 17. | Weins bridge with all necessary equipment | 1 | | |
| 18. | Current Transformers | 2 | | |
| 19. | Potential Transformers | 2 | | |
| 20. | Polar type potentiometers | 2 | | |
| 21. | Rectangular type potentiometers | 2 | | |
| 22. | Kelvin's Double bridge | 1 | | |
| 23. | Rheostats different ranges | 10 | | |
| 24. | Auto transformers | 2 | | |
| 25. | Loading Rheostats 3 phase | 2 | | |
| 26. | Loading Rheostat 1phase | 2 | | |
| 27. | Inductive load 3 phase | 1 | | |
| 28. | Inductive load 1phase | 1 | | |
| 29. | Working Tables | 4 | | |
| Name of the Lab: EE-213-F: Electrical Workshop Lab | | | | |
| 30. | One Way Switches | 10 | | |
| 31. | Two Way Switches | 2 | | |
| 32. | Lamp Holders | 2 | | |
| 33. | Lamps | 2 | | |
| 34. | Single Phase Energy Meter | 1 | | |
| 35. | Main Switch Single phase 16 A | 2 | | |
| 36. | Fluorescent Tube Light Set | 1 | | |
| 37. | High Pressure Mercury Vapour Lamp Set | 1 | | |
| 38. | Sodium Vapour Lamp Set | 1 | | |
| 39. | Heater | 1 | | |
| 40. | Light Weight Automatic Electric Iron | 1 | | |
| 41. | Fuses of Different Types | 1 Each | | |
| 42. | Relay | 1 | | |
| 43. | Contactors | 1 | | |

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|---|---|-----------------|------------------|-------------------|
| 44. | MCB | 1 | | |
| 45. | Circuit Breaker | 1 | | |
| 46. | Megger | 1 | | |
| 47. | Direct On-line Starter | 1 | | |
| 48. | Electrical Tools (Combination Plier, Tester, Nose Plier, Wire Stripper, Screw Driver Set, Cutter, Blade etc.) | 1 Each | | |
| 49. | Single Phase Induction Motor | 1 | | |
| 50. | Single phase Transformer | 1 | | |
| Name of the Lab: EE-215-F: Electrical Machines-I Lab | | | | |
| 51. | Single Phase Transformers | 4 | | |
| 52. | DC Shunt Generator with Prime Mover | 1 | | |
| 53. | DC Shunt Motor with Brake Pulley | 1 | | |
| 54. | DC Series Motor with Brake Pulley | 1 | | |
| 55. | DC Compound Generator with Prime Mover | 1 | | |
| 56. | Single Phase Resistive Load | 1 | | |
| 57. | Tachometers | 2 | | |
| 58. | Rheostat | 4 | | |
| 59. | Auto Transformers | 4 | | |
| 60. | Voltmeters | 4 | | |
| 61. | Ammeters | 4 | | |
| 62. | Wattmeters | 4 | | |
| Name of the Lab: EE-22-E: Analog Electronics Lab | | | | |
| 63. | Half Wave / Full wave Rectifier Kit | 03 | | |
| 64. | Capacitor Filter Kit | 03 | | |
| 65. | CC Amplifier as a buffer Kit | 03 | | |
| 66. | CE amplifier kit with voltage, current & power gain etc. | 03 | | |
| 67. | Three Terminal IC Regulator Kit | 03 | | |
| 68. | Voltage Doubler Kit | 03 | | |
| 69. | FET common drain & common source kit | 03 | | |
| 70. | Zener diode voltage regulator kit | 03 | | |
| 71. | Zener diode characteristics kit | 03 | | |
| 72. | BJT characteristics kit | 03 | | |
| 73. | RC coupled amplifier kit | 03 | | |
| 74. | CRO 30 MHz. | 05 | | |
| 75. | Function generator 3 MHz | 05 | | |
| 76. | Digital multimeter | 10 | | |
| 77. | UPS (Depending on equipments load) | 01 | | |
| Name of the Lab: EE-224-F: Digital Electronics Lab | | | | |
| 78. | Bread board with power supply | 10 | | |
| 79. | IC like 7400, 7402, 7404, 7406, 7408, 7410, 7420, 7432, 7485, 7486, 74150, 74154, 7447, 74147, LED, Seven segment display etc | 50 each | | |
| 80. | S-R, J-K, T & D-Type flip flop | 03 | | |
| 81. | Multiplexer & De-multiplexer kit | 03 | | |
| 82. | Synchronous UP / DOWN decade counter using JK Flip flop kit | 03 | | |
| 83. | 4 Bit comparator kit | 03 | | |
| 84. | 3 bit synchronous counter kit | 03 | | |
| Name of the Lab: EE-230-F: Principles of Communication Lab | | | | |
| 85. | Amplitude Modulation & Demodulation kits | 03 | | |
| 86. | Frequency Modulation & Demodulation Kits | 03 | | |
| 87. | Pulse Amplitude Modulation & Demodulation kits | 03 | | |
| 88. | Pulse Width Modulation & Demodulation kits | 03 | | |
| 89. | Pulse Position Modulation & Demodulation kits | 03 | | |
| 90. | Pulse Code Modulation & Demodulation kits | 03 | | |
| 91. | Amplitude Shift Keying kits | 03 | | |
| 92. | Frequency Shift keying kits | 03 | | |
| 93. | Phase Shift Keying kits | 03 | | |

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| 94. | Quadrature Phase Shift keying kits | 03 | | |
| 95. | CROs (30 MHz) | 05 | | |
| 96. | Fuction Generators (3 MHz) | 05 | | |
| 97. | DC Power Supplies | 05 | | |
| 98. | Multimeter | 10 | | |
| 99. | UPS (of capacity sufficient to run all experiments) | 01 | | |
| Name of the lab: Numerical Methods & Optimization Techniques Lab | | | | |
| 100. | PCs | 15 | | |
| 101. | MATLAB software-10 users | 01 | | |
| 102. | C/C++ | 01 | | |
| 103. | Any other Software tool for machnical technigues | 01 | | |
| 3rd Year Labs: Electronic Measurement And Instrumentation Lab, Power Electronics Lab, Microprocessors & Interfacing Lab, Electrical Machines-II Lab, Control System Engineering Lab, Digital VLSI Design Lab, Computer Added Electric Machines Design Lab, | | | | |
| Name of the Lab: EE-223-F: Electronic Measurement And Instrumentation Lab | | | | |
| 104. | Temp measurement using thermocouple kit | 03 | | |
| 105. | Temp measurement using Thermistor kit | 03 | | |
| 106. | Temp measurement using RTD Kit | 03 | | |
| 107. | Displacement using inductive pick up kit. | 03 | | |
| 108. | Displacement using capacitive pick up kit. | 03 | | |
| 109. | Displacement using LDR kit | 03 | | |
| 110. | L.V.D.T. kit | 03 | | |
| 111. | Strain gauge kit with weight kit | 03 | | |
| 112. | Pressure measurement using Piezo electric pick-up kit | 03 | | |
| 113. | Speed measurement dc motor with help of magnetic pick-up Kit | 03 | | |
| 114. | CRO | 03 | | |
| 115. | Speed measurement dc motor with help of photo electric picp up Kit | 03 | | |
| 116. | UPS (Depending on equipments load) | 01 | | |
| Name of the lab: EE-321-F: Power Electronics Lab | | | | |
| 117. | CROs | 5 | | |
| 118. | Characteristics of Diode, Thyristor and TRIAC kit | 1 | | |
| 119. | Characteristics of Transistor and MOSFET kit | 1 | | |
| 120. | R and RC firing circuit kit | 1 | | |
| 121. | UJT as Relaxation oscillator kit | 1 | | |
| 122. | Complementary voltage commutation using a lamp Flasher | 1 | | |
| 123. | Complementary voltage commutation using ring counter kit | 1 | | |
| 124. | Thyristorised D.C. circuit breaker | 1 | | |
| 125. | TRIAC AC Phase control kit | 1 | | |
| 126. | Full wave converter kit | 1 | | |
| 127. | DC chopper kit | 1 | | |
| 128. | Series Inverter kit | 1 | | |
| 129. | Bridge INVERTER kit | 1 | | |
| 130. | Single phase cycloconverter kit | 1 | | |
| 131. | Rheostats different ranges | 5 | | |
| 132. | Multi meters | 5 | | |
| 133. | Power supplies different ranges | 5 | | |
| 134. | Ammeters Different ranges | 5 | | |
| 135. | Voltmeters different ranges | 5 | | |
| 136. | Working Tables | 4 | | |
| Name of the Lab: ECE-319-F: Microprocessors & Interfacing Lab | | | | |
| 137. | 8085 Microprocessor trainer kit | 15 | | |
| 138. | 8086 Microprocessor trainer kit | 15 | | |
| 139. | 8085 Microprocessor simulator 20 Users | 01 | | |
| 140. | 8086 Microprocessor simulator 20 Users | 01 | | |
| 141. | Module of Traffic light controller | 03 | | |

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| 142. | Module of stepper motor | 03 | | |
| 143. | Module of seven segment display | 03 | | |
| 144. | Module of A/D converter | 03 | | |
| 145. | Module of D/A converter | 03 | | |
| 146. | Computer System | 10 | | |
| 147. | CRO (30 MHz) | 03 | | |
| 148. | Digital Multimeter | 03 | | |
| 149. | DC Power Supply | 03 | | |
| 150. | UPS (Depending on equipments load) | 01 | | |
| Name of the Lab: EE-327-F: Electrical Machines-II Lab | | | | |
| 151. | Three Phase Induction Motor with brake Pulley | 1 | | |
| 152. | Synchronous motor with brake pulley | 1 | | |
| 153. | Three phase Slip Ring Induction Motor with brake Pulley | 1 | | |
| 154. | Universal motor with Brake pulley | 1 | | |
| 155. | Single Phase Induction Motor with brake pulley | 1 | | |
| 156. | Single Phase Alternator | 1 | | |
| 157. | Direct Online Starter | 1 | | |
| 158. | Three Phase Resistive Load | 1 | | |
| 159. | Three Phase Auto Transformers | 2 | | |
| Name of the Lab: EE-324-F: Control System Engineering Lab | | | | |
| 160. | A.C. Modular Servo System for Position & Speed control kit | 1 | | |
| 161. | D.C. Modular Servo System for Speed & Position Control kit | 1 | | |
| 162. | Process control Simulator kit | 1 | | |
| 163. | A.C. Servo Motor Speed Torque Characteristics kit | 1 | | |
| 164. | D.C. Servo Motor Speed Torque Characteristics kit | 1 | | |
| 165. | Synchro Transmitter & Receiver kit | 1 | | |
| 166. | Magnetic Amplifier | 1 | | |
| 167. | Lead-Lag Compensating Network kit | 1 | | |
| 168. | Stepper motor Controller kit | 1 | | |
| 169. | PID Temperature Controller kit | 1 | | |
| 170. | Digital Multi-meter | 4 | | |
| 171. | PCs | 2 | | |
| 172. | DC Regulated Power Supplies | 2 | | |
| 173. | Function generators | 2 | | |
| 174. | Cathode Rays Oscilloscopes | 2 | | |
| 175. | Tachometer | 1 | | |
| 176. | Stop Watch | 1 | | |
| 177. | MATLAB Software | 5 users license | | |
| 178. | Ammeters (AC) | 2 | | |
| 179. | Ammeters (DC) | 2 | | |
| Name of the Labs: EE-330-F: Digital VLSI Design Lab | | | | |
| 180. | Microwind / Orcad / Cadence / Tanner tool or any other IC designing software (any one) | 10 user license | | |
| 181. | Computer Systems | 10 | | |
| 182. | UPS | 01 | | |
| Name of the Labs: EE-326-F: Computer Added Electric Machines Design Lab | | | | |
| 183. | PCs (latest configuration) | 6 | | |
| 184. | Machine Design Software (PSCAD/EMTP or any other) | 1 | | |
| 185. | C / C++ Compiler | For all PCs | | |
| 186. | Printers | 2 | | |
| Name of the Lab: EE-328-F: Power Systems Lab | | | | |
| 187. | Bucholtz Relay | 1 | | |
| 188. | IDMT Over Current Relay | 1 | | |

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| 189. | Transformer Oil Testing Kit | 1 | | |
| 190. | Over Voltage Relay Testing Set | 1 | | |
| 191. | Under Voltage Relay Testing Set | 1 | | |
| 192. | Transmission Line Model | 1 | | |
| 193. | Impedance Relay Kit | 1 | | |
| 194. | MHO Relay Kit | 1 | | |
| 195. | Phase Shifting Transformer | 1 | | |
| 196. | Earth Fault Relay | 1 | | |
| 4th Year Labs: Digital Signal Processing Lab | | | | |
| Name of the Lab: ECE-429-F: Digital Signal Processing Lab | | | | |
| 197. | MATLAB Software 25 Users with Signal processing tool box. | 01 | | |
| 198. | Printer | 01 | | |
| Name of the Lab: EEE-433-F: Microcontroller & Embedded System Lab | | | | |
| 199. | Microcontroller training / development kits 8051 | 05 | | |
| 200. | Simulation Softwares 10 user | 01 | | |
| 201. | 8051 Microcontroller Evaluation boards | 10 | | |
| 202. | Modules DC Motor, Steeper Motor, Intelligent LCD | 05 | | |
| 203. | CROs 30 MHz | 05 | | |
| 204. | Computer Systems | 10 | | |
| 205. | DC power supplies | 10 | | |
| 206. | Bread boards | 10 | | |
| 207. | IC 8051 | 50 | | |
| 208. | Components for power on circuit (8051) | 50 | | |
| 209. | USB Programmers | 05 | | |
| 210. | UPS (of capacity sufficient to run all experiments) | 01 | | |
| Name of the Lab: EE-417-F: PLCs & SCADA Lab | | | | |
| 211. | PLCs | 2 | | |
| 212. | PLC Controlled Process / System | 1 | | |
| 213. | Any SCADA Software / System | 01 | | |

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