

**Faculty of Technology**

**B. Tech. Chemical and Electrochemical Engineering**

**(R 2021) Semester – II**

<b>Course Code: BE3272</b>		
<b>Course Title: Basic Electrical, Electronics and Instrumentation Engineering Laboratory</b>		
<b>Sl. No.</b>	<b>Description of Equipment</b>	<b>Required numbers (for batch of 30 students)</b>
<b>1.</b>	<b>Verification of ohms and Kirchoff's Laws</b> 1. DC Regulated Power supply (0 - 30 V variable) 2. Bread Board 3. Resistors 4. Multimeter 5. Connecting wires	1 1 As per Circuit diagram 1 As Required
<b>2.</b>	<b>Three Phase Power Measurement</b> 1. Three Phase Variable Load, 2. Ammeters 0-10 A, MI, 3. Wattmeters 0-5 A, 300V, 4. Voltmeter 0-300v,MI 5. Connecting wires	1 2 2 1 As Required
<b>3.</b>	<b>Load test on DC Shunt Motor.</b> 1. Ammeter MC (0-20A) 2. Voltmeter MC (0-300)V 3. Rheostat 7.5 $\Omega$ , 10 A 4. Tachometer 5. Field Rheostat 175 $\Omega$ , 1.5 A 6. Connecting wires 7. DC Shunt Motor	1 1 1 1 1 As Required 1
<b>4.</b>	<b>Load test on Self Excited DC Generator</b> 1. Voltmeter(0- 300V) 2. Ammeter (0-30 A), (0-2A) 3. Voltmeter (0-30V) 4. Rheostat 175 $\Omega$ , 250 $\Omega$ 5. Tachometer 6. Connecting Wires 7. DC Shunt Motor coupled with DC shunt Generator	1 1 1 1 1 As Required 1
<b>5.</b>	<b>Load test on Single phase Transformer</b> 1. Ammeter (0-30) A, (0-5 ) A 2. Voltmeter (0-150)V, (0-300)V 3. Wattmeter – 300V, 5A, UPF 4. Autotransformer 5. Single phase Transformer 6. Connecting Wires	1 1 1 1 1 As Required
<b>6.</b>	<b>Load Test on Induction Motor</b> 1. Ammeter MI (0-20A) 2. Voltmeter MI (0-300)V 3. Wattmeter – 300V, 30 A 4. Tachometer – Digital	1 1 1 1

	5. Connecting Wires 6. Single phase Induction motor	As Required 1
<b>7.</b>	<b>Characteristics of PN and Zener Diodes</b> 1. PN Diode (BY127, OA79), Zener diode (6.8V, 1A) 2. Resistor 1 K $\Omega$ , 100 $\Omega$ 3. Bread Board 4. DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires	1 1 1 1 1 As Required
<b>8.</b>	<b>Characteristics of BJT</b> 1. Transistor (No-BC548) 2. Resistors- 1k $\Omega$ , 470K $\Omega$ , 1M $\Omega$ 3. Bread Board DC Regulated Power supply (0 - 30 V variable) 5. Multimeter 6. Connecting wires  <b>Characteristics of SCR</b> 1. D C Power Supply (0-128 V), (0-32V ), 2. Voltmeter (0-100V) 3. SCR TYN604 4. Digital multimeter 5. Ammeters (0-100mA, 0-25mA, 0-1mA) 6. Resistors 1K $\Omega$ , 1K $\Omega$ 7. Bread board 8. Connecting Wires  <b>Characteristics of MOSFET</b> 1. MOSFET (2N7000) 2. Bread board 3. resistor (1K $\Omega$ , 100K $\Omega$ ) 4. DC power supply (0-30V) 5. Multimeter 6. Connecting Wires	1 1 1 1 1 As Required  1 1 1 1 1 1 As Required  1 1 1 1 1 As Required
<b>9.</b>	<b>Design and analysis of Half wave and Full Wave rectifiers</b> 1. Diodes (Si-1N4007) – 4 2. Resistor 1K $\Omega$ 3. Capacitor 100 $\mu$ F 4. Digital Multimeter 5. CRO 6. Transformer (6-0-6)V 7. Bread Board 8. Connecting Wires	1 1 1 1 1 1 1 As Required
<b>10.</b>	<b>Measurement of displacement of LVDT</b> 1. LVDT Kit 2. Multimeter	1 1

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**(R 2021) Semester – III**  
**EL3311 Computer Aided Drafting And Modeling**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	Pentium IV computer or better hardware, with suitable graphics facility	30 No.
2.	Licensed software for Drafting and Modeling.	30 Licenses
3.	Laser Printer or Plotter to print / plot drawings	2 No.

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**EL3312 Fluid And Solid Operations Laboratory**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	Sieve shaker	1
2.	Leaf filter	1
3.	Sedimentation Jar	1
4.	Jaw Crusher	1
5.	Ball Mill / Pulverizer / Hammer Mill	Any one mill
6.	Cyclone Separator	1
7.	Roll Crusher	1
8.	Test Sieves.	1
9.	Viscometer	1
10.	Helical and spiral coils	1
11.	Packed column	1
12.	Fluidized bed	1

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**(R 2021) Semester – IV**

**EL3411 Heat and Mass Transfer**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	Data Logger	1
2.	Heat Exchanger	1
3.	Condenser	1
4.	Thermal conductivity measurement apparatus	1
5.	Soxlet Extractor	1
6.	Rotating Disc Contactor	1
7.	Convection Apparatus	1
8.	Emissivity measurement apparatus	1
9.	Simple Distillation Apparatus	1
10.	Double pipe heat exchanger	1
11.	Diffusion Apparatus	1
12.	Tray dryer	1

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**EL3412 Electrochemistry Laboratory**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	Electrochemical analyzer	1
2.	Potentiometer	3
3.	Glassy carbon electrode	15
4.	ITO electrode	15
5.	Reference electrode	15
6.	Pt electrode	15

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**EL3511 Chemical And Electrochemical Reaction Engineering Laboratory**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
<b>CHEMICAL REACTION ENGINEERING</b>		
1.	BATCH REACTOR	1
2.	Plug flow reactor	1
3.	CSTR	1
4.	PFR followed by a CSTR	1
<b>ELECTROCHEMICAL REACTION ENGINEERING</b>		
5.	Electrochemical batch reactor	1
6.	Chemical Bath	1
7.	CSTER	1
8.	PFER	1
9.	Packed bed reactor	1

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**(R 2021) Semester – VI**

**EL3611 Process Dynamics And Control Laboratory**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	U tube manometer with controller	1
2.	Interacting Tank	1
3.	Non Interacting Tank	1
4.	Open loop control system.	1
5.	Closed loop control system.	1
6.	ON/OFF controller	1
7.	Control valve characteristics	1
8.	Pressure Tuner.	1
9.	Temperature Tuner	1
10.	Proportional Controller	1
11.	Flow Transmitter.	1
12.	Level Transmitter	1
13.	Cascade control system	1



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**EL3612 Electrochemical Processes Laboratory**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	Electroplating Bath	1
2.	Hull Cell Electroplating Bath -	1
3.	Sacrificial anode system	1
4.	Rectifier	1
5.	Galvanostatic polarization apparatus.	1
6.	Ion exchange apparatus	1
7.	Electrochemical bath	1
8.	Membrane Cell	1
9.	Electrolytic Cell	1
10.	Etching apparatus	1
11.	Hull Cell	1
12.	Packed bed resin column	1

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**(R 2021) Semester – VII**

**EL3711 Computer Applications In Chemical Engineering**

<b>Sl.No.</b>	<b>Description of Equipment</b>	<b>Required members (for batch of 30 students)</b>
1.	computer( Pentium IV ), with suitable software MS OFFICE EXCEL, MATLAB, PROCESS SIMULATION SOFTWARE TOOL	15