

MYMENSINGH POLYTECHNIC INSTITUTE, MYMENSINGH  
Power TECHNOLOGY  
SEMESTER PLAN (3rd SEMESTER)

SUBJECT- **Basic Electronics**

**SUBJECT CODE-26811**

T-3 P-3 C-4

Week	General Topic	Day	Specific Topic	Practical	Test	Remarks
1 <sup>st</sup>	1. Understand the Electronics, its components and measuring and testing equipments.	1 <sup>st</sup>	1.1 Define Electronics. 1.2 Describe the scope of Electronics.	1. Show skill in identifying the electronic component	Test-1	
		2 <sup>nd</sup>	1.3 Describe the active and passive components used in electronic circuits. 1.4 Define Resistor, Inductor and Capacitor and mention the function of them in electronic circuits.			
2 <sup>nd</sup>	1. Understand the concept of soldering and color code.	1 <sup>st</sup>	1.6 Mention the function of Resistor, Capacitor and Inductor in Electronic circuit	2. Show skill in electrical measurement		
		2 <sup>nd</sup>	1.7 Describe the procedure of determining the value of Capacitor and Resistor using numeric and color code			
3 <sup>rd</sup>	2. Understand the concept of Semiconductor	1 <sup>st</sup>	2.1 Define conductor, Semiconductor and Insulator. 2.2 Define semiconductor with atomic structure 2.3 Describe the effect of temperature on conductivity of semiconductor	3. Show skill for determining the values of different resistors and capacitors with the help of code.		
		2 <sup>nd</sup>	2.4 Explain the energy band diagram of conductor, Semiconductor and Insulator. 2.5 Classify semiconductor 2.6 Describe the generation and recombination of hole and electron ion intrinsic semiconductor			
4 <sup>th</sup>	2. Understand the concept of Semiconductor	1 <sup>st</sup>	2.7 Define doping, p-type and n-type material, covalent bond, Majority and minority charge carrier. 2.8 Explain the characteristics of carbon and gallium arsenide/phosphide.	4. Show skill in performing soldering		
	3. Understand the concept of PN junction diode	2 <sup>nd</sup>	3.1 Define PN junction diode 3.2 Describe the formation of depletion layer in PN junction 3.3 Discuss potential barrier, drift and diffusion current and there physical significant.			
5 <sup>th</sup>	3. Understand the concept of PN junction	1 <sup>st</sup>	3.4 Mention the behavior of PN junction under forward and reverse bias 3.5 Explain the forward and reverse current	5. Show skill in soldering and DE soldering of		

	diode		voltage (VI) characteristics of PN junction diode	electronic components and wires to the other component and circuit boards.	
		2 <sup>nd</sup>	3.6 Explain the effect of temperature on Si and Ge diode characteristics 3.7 Define static resistance, dynamic resistance, forward break down voltage and reverse break down voltage. 3.8 Draw the equivalent circuit of PN junction diode 3.9 Describe the specification of diode		
6 <sup>th</sup>	4. Understand the DC power supplies	1 <sup>st</sup>	4.1 Define the DC power supply 4.2 Mention the importance of DC power supply 4.3 Define the rectification and rectifier 4.4 Explain the operation of half wave, full wave and bridge rectifier	6. Show skill in checking the semiconductor diode	Test-2
		2 <sup>nd</sup>	4.5 Discuss ripple factor, efficiency and TUF of half wave, full wave and bridge rectifier		
7 <sup>th</sup>	5. Understand the concepts of special diode	1 <sup>st</sup>	4.6 Explain the operation of different types filter circuit with wave shape 4.7 Define regulated and unregulated power supply 4.8 Describe the block diagram of a typical regulated DC power supply	7. Show skill in sketching forward and reverse characteristics curves of a semiconductor diode	
		2 <sup>nd</sup>	5.1 Define zener break down 5.2 Describe the operation of zener diode 5.3 Explain IV characteristics of zener diode		
8 <sup>th</sup>	5. Understand the concepts of special diode	1 <sup>st</sup>	5.4 Describe the application of zener diode in voltage stabilization, meter protection and peck clipper circuit	8. Show skill in sketching waves of half wave rectifier circuit	
		2 <sup>nd</sup>	5.5 Describe the construction, operation and application of tunnel diode, varactor diode, schottky diode, step recovery diode, PIN diode, LED, LCD, photo diode, solar cell.		
9 <sup>th</sup>	6. Understand the construction and operation of Bipolar junction transistor	1 <sup>st</sup>	5.6 Describe the construction, operation and application of DIAC, TRIAC & SCR.	9. Show skill in sketching waves of full wave center tapped rectifier circuit	
		2 <sup>nd</sup>	6.1 Define transistor 6.2 Describe the construction PNP and NPN transistor 6.3 State the basing rules of BJT		
10 <sup>th</sup>	6. Understand the construction and operation of Bipolar junction transistor	1 <sup>st</sup>	6.4 Explain the mechanism of current flow of NPN and PNP transistor 6.5 Establish the relation among base, emitter and collector current 6.6 Draw the three basic transistor configuration circuit	10. Show skill in construction full wave bridge rectifier	
		2 <sup>nd</sup>	6.7 Describe current amplification factor $\alpha$ , $\beta$		

			and $\gamma$ . 6.8 Establish the relation among $\alpha$ , $\beta$ and $\gamma$			
11 <sup>th</sup>	7. Understand the concepts of BJT amplifier	1 <sup>st</sup>	6.9 Solve problem related to $I_c$ , $I_e$ , $I_b$ and $\alpha$ , $\beta$ , $\gamma$ .	11. Show skill in identifying the bipolar junction transistor		
		2 <sup>nd</sup>	7.1 Define amplifier, amplification and gain 7.2 Mention the classification of amplifier 7.3 Describe the principle of operation of a common emitter (CE) amplifier			
12 <sup>th</sup>	7. Understand the concepts of BJT amplifier	1 <sup>st</sup>	7.4 Draw DC and AC equivalent circuit of the CE amplifier circuit 7.5 Mention the formula of input resistance, output resistance, current gain, voltage gain, power gain	12. Show skill in identifying input and output characteristics of a transistor in common emitter connection		
		2 <sup>nd</sup>	7.6 Solve problem related to different gain resistance			
13 <sup>th</sup>	8. SINGLE STAGE TRANSISTOR AMPLIFIER	1 <sup>st</sup>	SINGLE STAGE TRANSISTOR AMPLIFIER 8.1 Define amplifier and single stage amplifier. 8.2 Mention the types of amplifier. 8.3 Explain operation of transistor as amplifier with graphical demonstration. 8.4 Describe the operation of voltage divider biased CE amplifier circuit. 8.5 Explain the phase reversal of CE amplifier.	13. Show skill in testing special diodes		
		2 <sup>nd</sup>	8.6 Draw DC and AC equivalent circuit of voltage divider biased CE amplifier circuit. 8.7 Determine the AC equivalent load resistance of the CE amplifier circuit. 8.8 Determine voltage and power gain of the CE amplifier circuit. 8.9 Solve problem related to voltage and power gain where $\beta$ and input resistance of the transistor are given.			
14 <sup>th</sup>	9. MULTISTAGE TRANSISTOR AMPLIFIER	1 <sup>st</sup>	10.1 Define Multi stage amplifier. 10.2 Describe role of capacitor in single stage amplifier. 10.3 Describe gain, decibel gain frequency response, half power point, 3db point and bandwidth.	14. Verify the truth tables of different types of logic gates		

			10.4 Mention the advantages of dB gain. 10.5 Describe the operation of RC coupled, Transformer coupled and direct coupled multistage amplifier.			
		2 <sup>nd</sup>	. 10.6 Explain the frequency response of RC coupled, Transformer coupled and direct coupled multistage amplifier. 10.7 Mention the advantages and disadvantages of RC coupled, Transformer coupled and direct coupled multistage amplifier.			
15 <sup>th</sup>		1 <sup>st</sup>	10.8 Solve problem related to voltage and power gain where $\beta$ and input resistance of the transistor are given.			
		2 <sup>nd</sup>	Review Class			
16 <sup>th</sup>	Review Class					

Signature of class teacher

Name- Engr. Abu Khayer Mohammad Shahaj Uddin

Designation- Instructor (Tech/Electronics)