

**BHADRAK ENGG.SCHOOL & TECHNOLOGY (BEST), ASURALI, BHADRAK**

**ANALOG ELECTRONICS & OP-AMP. (Th-02)**

**CHAPTER-WISE DISTRIBUTION OF PERIODS & EXPECTED MARKS**

<b>Sl. No.</b>	<b>Name of the Chapter</b>	<b>Periods as per Syllabus</b>	<b>Required period</b>	<b>Expected Marks</b>
01	P-N JUNCTION DIODE	06	06	10
02	SPECIAL SEMICONDUCTOR DEVICES	05	04	10
03	RECTIFIER CIRCUITS AND FILTERS	07	07	10
04	TRANSISTORS	07	06	10
05	TRANSISTOR CIRCUITS	07	06	10
06	TRANSISTOR AMPLIFIER AND OSCILLATORS	13	15	20
07	FIELD EFFECT TRANSISTORS	06	06	15
08	OPERATIONAL AMPLIFIERS	09	11	15
	<b>TOTAL</b>	<b>60</b>	<b>61</b>	<b>100</b>

**Sign of Lect.**

**Sign of HOD.**

**Sign of AIC**

**Sign of Vice Principal**

## LESSON PLAN

<b>Discipline:</b> Electrical Engg.	<b>Semester:</b> Forth (4 <sup>th</sup> )	<b>Name of the Faculty:</b> Er Abadul Sajid Khan/ Er Amit Kumar Patra
<b>Subject:</b> Analog Electronics & OP-AMP(TH-02)	<b>No. of days/week class allotted:</b> Six (6)	<b>Semester from Date:</b> 16.02.23 <b>to Date:</b> 23.05.23 <b>No. of Weeks:</b> 15
<b>WEEK</b>	<b>CLASS DAY</b>	<b>THEORY TOPICS</b>
1 <sup>st</sup>	1 <sup>st</sup>	<b>Topic No.- 01(PN-JUNCTION DIODE)</b> Introduction, P-N junction diode
	2 <sup>nd</sup>	Working of diode
	3 <sup>rd</sup>	V-I characteristics of PN-junction diode
	4 <sup>th</sup>	DC load line. Imp. Terms such as Ideal diode and knee voltage
	5 <sup>th</sup>	Junction breakdown Avalanche breakdown & Zener breakdown
	6 <sup>th</sup>	P-N diode clipping circuit P-N diode clamping circuit
2 <sup>nd</sup>	1 <sup>st</sup>	<b><i>Possible Question Answer Discussion</i></b>
	2 <sup>nd</sup>	<b>Topic No.- 02 (SPECIAL EMICONDUCTOR DEVICES)</b> Thermistors, Sensors& Barraters
	3 <sup>rd</sup>	Zener Diode
	4 <sup>th</sup>	Tunnel Diode
	5 <sup>th</sup>	PIN Diode
	6 <sup>th</sup>	<b><i>Possible Question Answer Discussion</i></b>
3 <sup>rd</sup>	1 <sup>st</sup>	<b>Topic No.- 03(RECTIFIER CIRCUITS AND FILTERS)</b> Rectifiers and its Classification
	2 <sup>nd</sup>	Analysis of Half wave and Full wave Rectifiers
	3 <sup>rd</sup>	D.C output Current and Voltage. R.M.S. output current and voltage
	4 <sup>th</sup>	Rectifier efficiency. Ripple factor

	5 <sup>th</sup>	Regulation Transformer utilization factor Peak inverse factor
	6 <sup>th</sup>	Filters (introduction) Shunt capacitor filter
4 <sup>th</sup>	1 <sup>st</sup>	Choke input filter , PI filter
	2 <sup>nd</sup>	<b>Possible Question Answer Discussion</b>
	3 <sup>rd</sup>	<b>Topic No.- 04(TRANSISTORS)</b> Principle of Bipolar junction Transistors
	4 <sup>th</sup>	Modes of operations of Transistors,
	5 <sup>th</sup>	Current components in a Transistors
	6 <sup>th</sup>	<b>Monthly Test-01</b>
5 <sup>th</sup>	1 <sup>st</sup>	Transistors as an Amplifier
	2 <sup>nd</sup>	Transistor circuit configuration and its characteristics CB configuration
	3 <sup>rd</sup>	CE configuration ,CC configuration
	4 <sup>th</sup>	<b>Possible Question Answer Discussion</b>
	5 <sup>th</sup>	<b>Topic No.- 05(TRANSISTOR CIRCUITS)</b> Transistor biasing
	6 <sup>th</sup>	Stabilization, Stability factor
6 <sup>th</sup>	1 <sup>st</sup>	Different methods of Transistor Biasing
	2 <sup>nd</sup>	Base Resistor method
	3 <sup>rd</sup>	Collector to Base bias
	4 <sup>th</sup>	Self-bias or voltage divider bias
	5 <sup>th</sup>	<b>Possible Question Answer Discussion</b>
	6 <sup>th</sup>	<b>Topic No.- 06(TRANSISTOR AMPLIFIER AND OSCILLATOR)</b> Practical circuit of Transistor amplifier
7 <sup>th</sup>	1 <sup>st</sup>	D.C load line and D.C equivalent ckt A.C load line and A.C equivalent circuit
	2 <sup>nd</sup>	<b>Monthly Test-02</b>
	3 <sup>rd</sup>	Calculation of gain, Phase reversal

	4 <sup>th</sup>	H parameters of Transistors
	5 <sup>th</sup>	Simplified h- parameters of Transistors
	6 <sup>th</sup>	Generalize approximation model, Analysis of CB,CE, CC amplifiers using generalized approximate model
8 <sup>th</sup>	1 <sup>st</sup>	Multi stage Transistor amplifier RC-coupled amplifier
	2 <sup>nd</sup>	Transformer coupled amplifier
	3 <sup>rd</sup>	Feedback in amplifier, General Theory of feedback Negative feedback circuit & Advantages of negative FB.
	4 <sup>th</sup>	Power Amplifiers and its Classifications Difference between Voltage amplifier and Power amplifier
	5 <sup>th</sup>	Transformer coupled class-A amplifier
	6 <sup>th</sup>	Class-A push-pull amplifier Class-B push-pull amplifier
9 <sup>th</sup>	1 <sup>st</sup>	Oscillators , Types of Oscillators
	2 <sup>nd</sup>	Essentials of Transistor Oscs.
	3 <sup>rd</sup>	Principle of operations of Tuned collector, Colpitt, Hartley oscillators, Phase shift ,Wien Bridge oscillators
	4 <sup>th</sup>	<b>Possible Question Answer Discussion</b>
	5 <sup>th</sup>	<b>Topic No.- 07(FIELD EFFECT TRANSISTORS)</b> Classifications of FET, Advantages of FET over BJT
	6 <sup>th</sup>	Principle of operation of FET
10 <sup>th</sup>	1 <sup>st</sup>	FET parameters (No math derivation) d.c drain resistance
	2 <sup>nd</sup>	a.c drain resistance
	3 <sup>rd</sup>	<b>Monthly Test-03</b>
	4 <sup>th</sup>	Trans conductance
	5 <sup>th</sup>	Biasing of FET
	6 <sup>th</sup>	<b>Possible Question Answer Discussion</b>

11 <sup>th</sup>	1 <sup>st</sup>	<b>Topic No.- 08(OPERATIONAL AMPLIFIERS)</b> General circuit of OP-Amp and IC-741
	2 <sup>nd</sup>	Operational amplifier stages Equivalent circuits of OP-AMP
	3 <sup>rd</sup>	Open loop OP-AMP configurations OP-AMP with feedback
	4 <sup>th</sup>	Inverting OP-AMP
	5 <sup>th</sup>	Non inverting OP-AMP Voltage follower and buffer
	6 <sup>th</sup>	Differential amplifier
12 <sup>th</sup>	1 <sup>st</sup>	Adder or Summing amplifier
	2 <sup>nd</sup>	Subtractor
	3 <sup>rd</sup>	Integrator
	4 <sup>th</sup>	Differentiator
	5 <sup>th</sup>	Comparator
	6 <sup>th</sup>	<b><i>Possible Question Answer Discussion</i></b>
13 <sup>th</sup>	1 <sup>st</sup>	<b>Monthly Test-04</b>
	2 <sup>nd</sup>	Review Class for Chapter No.- 01
	3 <sup>rd</sup>	Review Class for Chapter No.- 02
	4 <sup>th</sup>	Review Class for Chapter No.- 03
	5 <sup>th</sup>	Review Class for Chapter No.- 04
	6 <sup>th</sup>	Review Class for Chapter No.- 05
14 <sup>th</sup>	1 <sup>st</sup>	Review Class for Chapter No.- 06
	2 <sup>nd</sup>	Review Class for Chapter No.- 07
	3 <sup>rd</sup>	Review Class for Chapter No.- 07
	4 <sup>th</sup>	Previous Year (S- 22) Question Answer Discussion
	5 <sup>th</sup>	Previous Year (S- 22) Question Answer Discussion
	6 <sup>th</sup>	Previous Year (S- 22) Question Answer Discussion

15 <sup>th</sup>	1 <sup>st</sup>	Previous Year (S- 21) Question Answer Discussion
	2 <sup>nd</sup>	Previous Year (S- 21) Question Answer Discussion
	3 <sup>rd</sup>	Previous Year (S- 20) Question Answer Discussion
	4 <sup>th</sup>	Previous Year (S- 20) Question Answer Discussion
	5 <sup>th</sup>	Previous Year (S- 19) Question Answer Discussion
	6 <sup>th</sup>	Previous Year (S- 19) Question Answer Discussion

*Chapters covered up to IA: **1, 2,3,4 & 5.***