



# GANDHI SCHOOL OF ENGINEERING

**BHABANDHA, BERHAMPUR**

**BRANCH:- ELECTRICAL ENGINEERING**

**SEMESTER:- 4th**

**SUBJECT:- AE**

**NAME OF FACULTY-Er. P.ACHARYA &Er. NISAN BEHERA**

			Topic to be taken					
SL. No	Topic/Module	No. of period	Details of the topics	Date	Topic No.	Topic Name	Date	Remarks
<b>1</b>	P-N JUNCTION DIODE	<b>06</b>	1. 1 P-N Junction Diode 1. 2 Working of Diode 1. 3 V-I characteristic of PN junction Diode 1. 4 DC load line 1. 5 Important terms such as Ideal Diode, Knee voltage 1. 6 Junctions break down. 1.6.1 Zener breakdown 1.6.2 Avalanche breakdown 1. 7 P-N Diode clipping Circuit. 1. 8 P-N Diode clamping Circuit	<b>13.02.2023 TO 20.02.2023</b>	<b>1.1 1.2 1.3 1.4 1.5 1.6 1.6.1 1.6.2 1.7 1.8</b>	P-N Junction Diode Working of Diode V-I characteristic of PN junction Diode DC load line Important terms such as Ideal Diode, Knee voltage Junctions break down. 1.6.1 Zener breakdown Avalanche breakdown P-N Diode clipping Circuit. P-N Diode clamping Circuit	13.02.2023 14.02.2023 15.02.2023 16.02.2023 17.02.2023 20.02.2023	
<b>2</b>	SPECIAL SEMICONDUCTOR DEVICES	<b>05</b>	2. 1 Thermistors, Sensors & barretters 2. 2 Zener Diode 2. 3 Tunnel Diode 2. 4 PIN Diode	21.02.2023 TO 27.02.2023	<b>2.1 2.2 2.3 2.4</b>	Thermistors, Sensors & barretters Zener Diode Tunnel Diode PIN Diode	21.02.2023 22.02.2023 23.02.2023 24.02.2023 25.02.2023 27.02.2023	


<b>3</b>	RECTIFIER CIRCUITS & FILTERS	<b>07</b>	3.1 Classification of rectifiers 3.2 Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate: 3.2.1 DC output current and voltage 3.2.2 RMS output current and voltage 3.2.3 Rectifier efficiency 3.2.4 Ripple factor 3.2.5 Regulation 3.2.6 Transformer utilization factor 3.2.7 Peak inverse voltage 3.3 Filters: 3.3.1 Shunt capacitor filter 3.3.2 Choke input filter 3.3.3 $\pi$ filter	<b>28.02.2023 TO 10.03.2023</b>	<b>3.1</b> Classification of rectifiers <b>3.2.</b> Analysis of half wave, full wave centre tapped and Bridge rectifiers and calculate: <b>3.2.1</b> DC output current and voltage <b>3.2.2</b> RMS output current and voltage <b>3.2.3</b> Rectifier efficiency <b>3.2.4</b> Ripple factor <b>3.2.5</b> Regulation <b>3.2.6</b> Transformer utilization factor <b>3.2.7</b> Peak inverse voltage <b>3.3</b> Filters: <b>3.3.1</b> Shunt capacitor filter <b>3.3.2</b> Choke input filter <b>3.3.3</b> $\pi$ filter	28.02.2023 01.03.2023 02.03.2023 03.03.2023 04.03.2023 06.03.2023 09.03.2023 10.03.2023		
<b>4</b>	TRANSISTORS	<b>07</b>	4.1 Principle of Bipolar junction transistor 4.2 Different modes of operation of transistor 4.3 Current components in a transistor 4.4 Transistor as an amplifier 4.5 Transistor circuit configuration & its characteristics 4.5.1 CB Configuration	<b>11.03.2023 TO 21.03.2023</b>	<b>4.1</b> Principle of Bipolar junction transistor <b>4.2</b> Different modes of operation of transistor <b>4.3</b> Current components in a transistor <b>4.4</b> Transistor as an amplifier <b>4.5</b> Transistor circuit configuration & its characteristics <b>4.5.1</b> CB Configuration <b>4.5.2</b> CE Configuration <b>4.5.3</b> CC Configuration	11.03.2023 13.03.2023 14.03.2023 15.03.2023 16.03.2023 17.03.2023 18.03.2023 20.03.2023 21.03.2023		

			4.5.2 CE Configuration 4.5.3 CC Configuration					
<b>5</b>	TRANSISTOR CIRCUITS	<b>07</b>	5.1 Transistor biasing 5.2 Stabilization 5.3 Stability factor 5.4 Different method of Transistors Biasing 5.4.1 Base resistor method 5.4.2 Collector to base bias 5.4.3 Self bias or voltage divider method	<b>22.03.2023 TO 03.04.2023</b>	<b>5.1</b> <b>5.2</b> <b>5.3</b> <b>5.4</b> <b>5.4.1</b> <b>5.4.2</b> <b>5.4.3</b>	Transistor biasing Stabilization Stability factor Different method of Transistors Biasing Base resistor method Collector to base bias Self bias or voltage divider method	22.03.2023 23.03.2023 24.03.2023 25.03.2023  27.03.2023 28.03.2023  03.04.2023	

6	TRANSISTOR AMPLIFIERS & OSCILLATORS	13	6.1 Practical circuit of transistor amplifier 6.2 DC load line and DC equivalent circuit 6.3 AC load line and AC equivalent circuit 6.4 Calculation of gain 6.5 Phase reversal 6.6 H-parameters of transistors 6.7 Simplified H-parameters of transistors 6.8 Generalised approximate model 6.9 Analysis of CB, CE, CC amplifier using generalised approximate model 6.10 Multi stage transistor amplifier 6.10.1 R.C. coupled amplifier 6.10.2 Transformer coupled amplifier 6.11 Feed back in amplifier 6.11.1 General theory of feed back 6.11.2 Negative feedback circuit 6.11.3 Advantage of negative feedback 6.12 Power amplifier and its classification 6.12.1 Difference between voltage amplifier and power amplifier 6.12.2 Transformer coupled	<b>04.04.2023</b> <b>TO</b> <b>28.04.2023</b>	<b>6.1</b> <b>6.2</b> <b>6.3</b> <b>6.4</b> <b>6.5</b> <b>6.6</b> <b>6.7</b> <b>6.8</b> <b>6.9</b> <b>6.10</b> <b>6.10.1</b> <b>6.10.2</b> <b>6.11</b> <b>6.11.1</b> <b>6.11.2</b> <b>6.11.3</b> <b>6.12</b> <b>6.12.1</b> <b>6.12.2</b>	Practical circuit of transistor amplifier DC load line and DC equivalent circuit AC load line and AC equivalent circuit Calculation of gain Phase reversal H-parameters of transistors Simplified H-parameters of transistors Generalised approximate model Analysis of CB, CE, CC amplifier using generalised approximate model Multi stage transistor amplifier R.C. coupled amplifier Transformer coupled amplifier Feed back in amplifier General theory of feed back Negative feedback circuit Advantage of negative feedback Power amplifier and its classification Difference between voltage amplifier and power amplifier	04.04.2023 05.04.2023 06.04.2023 08.04.2023 10.04.2023 11.04.2023 12.04.2023 13.04.2023  15.04.2023 17.04.2023 18.04.2023 19.04.2023 20.04.2023  21.04.2023 24.04.2023 25.04.2023	
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			class A power amplifier 6.12.3 Class A push – pull amplifier 6.12.4 Class B push – pull amplifier 6.13 Oscillators 6.13.1 Types of oscillators 6.13.2 Essentials of transistor oscillator 6.13.3 Principle of operation of tuned collector, Hartley, colpitt, phase shift, weinbridge oscillator (no mathematical derivations)		<b>6.12.3</b> Transformer coupled class A power amplifier <b>6.12.4</b> Class A push – pull amplifier <b>6.13</b> Class B push – pull amplifier <b>6.13.1</b> Oscillators <b>6.13.2</b> Types of oscillators <b>6.13.3</b> Essentials of transistor oscillator Principle of operation of tuned collector, Hartley, colpitt,	26.04.2023 27.04.2023 28.04.2023	
<b>7</b>	FIELD EFFECT TRANSISTOR	<b>06</b>	7.1 Classification of FET 7.2 Advantages of FET over BJT 7.3 Principle of operation of BJT 7.4 FET parameters (no mathematical derivation) 7.4.1 DC drain resistance 7.4.2 AC drain resistance 7.4.3 Trans-conductance 7.5 Biasing of FET	<b>29.04.2023</b> <b>TO</b> <b>03.05.2023</b>	<b>7.1</b> Classification of FET <b>7.2</b> Advantages of FET over BJT <b>7.3</b> Principle of operation of BJT <b>7.4</b> FET parameters (no mathematical derivation) <b>7.4.1</b> DC drain resistance <b>7.4.2</b> AC drain resistance <b>7.4.3</b> Trans-conductance <b>7.5</b> Biasing of FET	29.04.2023 01.05.2023 02.05.2023 03.05.2023	

8	OPERATIONAL AMPLIFIERS	09	8.1 General circuit simple of OP-AMP and IC – CA – 741 OP AMP 8.2 Operational amplifier stages 8.3 Equivalent circuit of operational amplifier 8.4 Open loop OP-AMP configuration 8.5 OPAMP with fed back 8.6 Inverting OP-AMP 8.7 Non inverting OP-AMP 8.8 Voltage follower & buffer 8.9 Differential amplifier 8.9.1 Adder or summing amplifier 8.9.2 Sub tractor 8.9.3 Integrator 8.9.4 Differentiator 8.9.5 Comparator	04.05.2023 TO 15.05.2023	8.1 8.2 8.3 8.4 8.5 8.6 8.7 8.8 8.9 8.9.1 8.9.2 8.9.3 8.9.4 8.9.5	General circuit simple of OP-AMP and IC – CA – 741 OP AMP Operational amplifier stages Equivalent circuit of operational amplifier Open loop OP-AMP configuration OPAMP with fed back Inverting OP-AMP Non inverting OP-AMP Voltage follower & buffer Differential amplifier Adder or summing amplifier Sub tractor Integrator Differentiator Comparator	04.05.2023 06.05.2023 08.05.2023 10.05.2023 11.05.2023 12.05.2023 15.05.2023	
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