

MOHAMMED SATHAK A J COLLEGE OF ENGINEERING
Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN							
Department of Electronics and Communication Engineering							
Name of the Subject	ELECTRONIC DEVICES AND CIRCUITS	Name of the handling Faculty	Mrs.S.ANUSUYA				
Subject Code	EC 3353	Year / Sem	II/III				
Acad Year	2022-2023	Batch	2021-2025				
Course Objective							
To give a comprehensive exposure to all types of devices and circuits constructed with discrete components. This helps to develop a strong basis for building linear and digital integrated circuits.							
To analyze the frequency response of small signal amplifiers							
To design and analyze single stage and multistage amplifier circuits							
To study about feedback amplifiers and oscillators principles							
To understand the analysis and design of multivibrators							
Course Outcome							
Explain the structure and working operation of basic electronic devices.							
Design and analyze amplifiers							
Analyze frequency response of BJT and MOSFET amplifiers							
Design and analyze feedback amplifiers and oscillator principles							
Design and analyze power amplifiers and supply circuits							
Lesson Plan							
Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
UNIT I - SEMICONDUCTOR DEVICES							
1	Introduction about electronics	T1	1	BB	L2	CO1,CO2	PO1
2	PN junction diode	T1	1	BB	L2	CO1,CO2	PO1
3	Zener diode - structure, operation and V-I characteristics	T1	1	BB	L2	CO1,CO2	PO1,PO2
4	BJT - structure, operation and V-I characteristics	T1	1	BB	L2	CO1,CO2, CO3	PO1,PO2
5	MOSFET-structure, operation and V-I characteistics	T1	1	BB	L2	CO1,CO2, CO3	PO1,PO2
6	UJT-structure, operation and V-I characteistics	T1	1	BB	L2	CO1	PO1
7	Diode capacitance- Transition and Diffusion capacitance	T1	1	BB	L2	CO1	PO1
8	Rectifiers- Half wave and Full wave rectifiers	T1	1	BB	L2	CO1	PO1,PO2
9	Zener as voltage regulator	T1	1	BB	L2	CO1	PO1,PO2
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Practical learning of electronic components							
Evaluation method : Marks awarded based on identification (Symbol, Diagram)							
UNIT II -AMPLIFIERS							
10	Introduction to amplifiers, Load line, operating point	T1	1	BB	L2	CO2,CO3	PO1
11	Biasing methods of BJT	T1	1	BB	L2	CO2,CO3	PO1,2,3
12	Biasing methods of MOSFET	T1	1	BB	L2	CO2,CO3	PO1,2,
13	BJT small signal model	T1,R1	1	BB	L2	CO2,CO3	PO1,2,3
14	Analysis of CE,CB,CC amplifiers	T1	1	BB	L4	CO2,CO3	PO1,2,3
15	Gain and frequency response - BJT	T1	1	BB	L2	CO2,CO3	PO1,2
16	MOSFET small signal model	T1,R1	1	BB	L2	CO2,CO3	PO1,2,3
17	Analysis of CS,CG and source follower	T1	1	BB	L4	CO2,CO3	PO1,2

18	Gate and frequency response , High frequency analysis	T1	1	BB	L2	CO2,CO3	PO1,2
Suggested Activity: Assignment / Case Studies / Tutorials/ Quiz / Mini Projects / Model Developed/others Planned if any							
Design a amplifier model (group assignment)							
Evaluation method : Marks awarded based on Design and Circuit Diagram							

UNIT III- MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER							
19	Cascode amplifiers	T1	1	BB	L3	CO3	PO 1,2,3
20	Differential amplifier	T1,R1	1	BB	L3	CO3	PO 1,2,3
21	Common mode analysis	T1	1	BB	L3	CO3	PO 1,2
22	Difference mode analysis	T1	1	BB	L3	CO3	PO 1,2
23	MOSFET input stages	T1	1	BB	L2	CO3	PO2
24	Tuned amplifiers	T1,R1	1	BB	L3	CO3	PO 1,2
25	Gain and frequency response	T1	1	BB	L2	CO3	PO1
26	Neutralization methods	T1	1	BB	L2	CO3	PO1
27	Problems on amplifiers	T1	1	BB	L3	CO3	PO 1,2
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any QUIZ							
Evaluation method : Marks awarded based on their responses							
UNIT IV-FEEDBACK AMPLIFIERS AND OSCILLATORS							
28	Introduction about negative feedback amplifiers	T1	1	BB	L2	CO4	PO1
29	Voltage /Current, Series feedback	T1	1	BB	L3	CO4	PO1,2
30	Voltage /Current, Shunt feedback	T1	1	BB	L3	CO4	PO1,2
31	Positive feedback,Condition for ossillations	R2,T1	2	BB	L2	CO4	PO1,2
32	RC Phase shift oscillator	R2	1	BB	L3	CO4	PO1,2,3
33	Wein bridge oscillator	R2	1	BB	L3	CO4	PO1,2
34	Colpitts oscillator	R2	1	BB	L3	CO4	PO1,2
35	Hartley oscillator	R2	1	BB	L3	CO4	PO1,2
36	Crystal Oscillator-	R2	1	BB	L3	CO4	PO1,2,3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any MIND MAP TECHNIQUE							
Evaluation method : Marks awarded based on their presentation							
UNIT V- POWER AMPLIFIERS AND DC/DC CONVERTERS							
37	Power amplifiers	T1,R1	1	BB	L3	CO5	PO1
38	Class A and Class B power amplifier	T1,R1	1	BB	L3	CO5	PO1,2
39	Class AB and Class C power amplifier	T1,R1	1	BB	L3	CO5	PO1,2
40	MOSFET- temperature Effect	T1	1	BB	L2	CO5	PO1
41	Class AB power amplifier using MOSFET	T1	1	BB	L2	CO5	PO1,2
42	DC/DC converters	T1	1	BB	L2	CO5	PO1
43	Buck analysis and design	R1	1	BB	L2	CO5	PO1,2,3
44	Boost analysis and design	R1	1	BB	L3	CO5	PO1,2,3
45	Buck-Boost analysis and design	R1	1	BB	L3	CO5	PO1,2,3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Case study							
Evaluation method : Marks awarded based on their presentation							

Content Beyond the Syllabus Planned															
1	Instrumentation amplifier														
Text Books															
1	David A. Bell ,”Electronic devices and circuits”, Oxford higher education press, 5th edition, 2010														
2	Robert L.Boylestad, ”Electronic devices and circuit theory”, 10th edition, Pearson education/PHI, 2008.														
3	Adel.S.Sedra, Kenneth C. Smith, 'Micro Electronic Circuits', Oxford university press, 7th edition, 2014.														
Reference Books															
1	Donald A Neamen, ”Electronic Circuit Analysis and Design” Tata McGraw Hill, 3rd Edition , 2010.														
2	D.Schilling and C.Belove, ' Electronic circuits', Mcgraw hill, 3rd edition, 1989.														
3	Muhammad H.Rashid, 'Power Electronics", Pearson edition/PHI, 2004														
Website / URL References															
1	https://www.youtube.com/watch?v=3h2edx6O6Vc														
2	https://nptel.ac.in/courses/108/108/108108122/														
3	https://nptel.ac.in/courses/108/108/108108122/														
Blooms Level															
Level 1 (L1) : Remembering			Lower Order Thinking	Fixed Hour Exams	Level 4 (L4) : Analysing			Lower Order Thinking	Higher Order Thinking	Projects / Mini Projects					
Level 2 (L2) : Understanding					Level 5 (L5) : Evaluating										
Level 3 (L3) : Applying					Level 6 (L6) : Creating										
Mapping syllabus with Bloom’s Taxonomy LOT and HOT															
Unit No	Unit Name		L1	L2	L3	L4	L5	L6	LOT	HOT	Total				
Unit 1	Semiconductor Devices		0	9	0	0	0	0	9	0	9				
Unit 2	Amplifiers		0	7	0	2	0	0	7	2	9				
Unit 3	Multistage amplifier and Differential amplifier		0	3	6	0	0	0	9	0	9				
Unit 4	Feedback amplifiers and Oscillators.		0	2	7	0	0	0	9	0	9				
Unit 5	Power amplifiers and DC/DC coonverters		0	4	5	0	0	0	9	0	9				
Total			0	25	18	2	0	0	43	2	45				
Total Percentage			0	55.56	40	4.444444	0	0	95.56	4.444444444	100				
CO PO Mapping															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	0	0	0	0	0	0	0	0	0	0	3	2	1
CO2	3	3	2	0	0	0	0	0	0	0	0	0	3	2	1
CO3	3	3	1	0	0	0	0	0	0	0	0	0	3	2	1
CO4	3	3	1	0	0	0	0	0	0	0	0	0	3	2	1
CO5	3	2	1	0	0	0	0	0	0	0	0	0	3	2	1
Avg	3	2.6	1	0	0	0	0	0	0	0	0	0	3	2	1
Justification for CO-PO mapping															
CO1	There is a scope for experimental design and verification														
CO2	There is a scope for experimental design and verification														
CO3	There is a scope for experimental design and verification														
CO4	There is a scope for experimental design and verification														
CO5	There is a scope for experimental design and verification														
3	High level			2	Moderate level			1	Low level						
Name & Sign of Faculty Incharge :Mrs.S.Anusuya															
Name & Sign of Subject Expert :															
Head of the Department :															