SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi,Accredited by
NAAC with "A" Grade – 3.32 CGPA Recognized under 2(f) & 12(B) of UGC Act 1956,
Approved by AICTE, New Delhi,Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W G DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
20EC3T05	ANALOG ELECTRONICS	III	EEE	5	2021-2022	25-10-2021

COURSE OUTCOMES

After completion of the course students are able to

1	Explain the characteristics of different semiconductor diodes and its applications (K2)
2	Describe the characteristics of Transistors, FET and different biasing techniques. (K1)
3	Construct the wave shaping circuits of non sinusoidal signals. (K3)
4	Analyze and design the Oscillators using BJT(K4)

UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
			SEMICONDUCTOR DIDES ANS IT'S APPLICATIONS			
		1.1	Band structure of pn junction,	T1, T3	1	
		1.2	current components,	T1, T3	1	
		1.3	Volt-ampere characteristics	T1, T3	1	
		1.4	Transition and diffusion capacitance of p-n junction diodes,	T1, T3	1	
1	CO1: Explain the characteristics of different semiconductor diodes & transistors and its applications (K2)	1.5	Breakdown of junctions on reverse bias, Zener and Avalanche breakdowns,	T1, T3	1	Chalk & Talk, Smart Board and PPT
		1.6	TUNNEL Diode: Operation and characteristics	T1, T3	1	
		1.7	Diode as a Switch.		1	
		1.8	Problems	T1, T2	2	
		1.9	Rectifiers: Half wave,	T1, T2	1	
		1.10	Full wave: center tap Rectifiers	T1, T2	1	
		1.11	Bridge type, analysis for different parameters: PIV, TUF, efficiency, ripple factor, regulation, etc.	T1, T2	1	
		1.12	Filters: Need of filters,	T1, T2	1	

		1.13	Types: Harmonic components in a rectifier circuit,	T1, T2	1	
		1.14	Capacitor filter,	T1, T2	1	
		1.15	Problems	T1, T2	2	
			Total		17	

2. JUNCTION TRANSISTOR CHARACTERISTICS AND BIASING

2	CO2-Describe the characteristics of Transistors, FET and biasing. (K1)	2.1	PNP junction transistors,	T1, T3	1	Chalk & Talk, Smart Board and PPT
		2.2	NPN junction transistors,	T1, T3	1	
		2.3	Characteristics of the current flow across the base regions,	T1, T3	1	
		2.4	Transistor as a device in CB, configurations, their characteristics,	T1, T3	1	
		2.5	Transistor as a device in CE and CC configurations, their characteristics.	T1, T3	1	
		2.6	The operating Point, DC & AC load lines,	T1, T3	1	
		2.7	Fixed Bias and problems	T1, T3	1	
		2.8	Collector Feedback Bias,	T1, T3	1	
		2.9	Emitter Feed Back Bias,	T1, T3	1	
		2.10	Self Bias and problems,	T1, T3	1	
		2.11	Stabilization, various stabilization circuits,	T1, T3	1	
		2.12	Transistor as a Switch	T1, T3	1	
		2.13	Problems	T1, T3	3	
			Total		15	

3. FETS & UJT CHARACTERISTICS

3	CO2-Describe the characteristics of Transistors, FET and biasing. (K1)	3.1	FET types, construction, operation, characteristics, parameters,	T2, T3	1	Chalk & Talk, Smart Board and PPT
		3.2	MOSFET-construction,	T2, T3	1	
		3.3	Characteristics and comparative study of Enhancement and Depletion MOSFET (P-channel& N-channel).	T2, T3	1	
		3.4	Comparison between JFET and MOSFET.FET & MOSFET BIASING:	T2, T3	1	
		3.5	Introduction, Fixed-Bias configuration,	T2, T3	1	
		3.6	Self-Bias Configuration	T2, T3	1	
		3.7	Voltage- Divider Biasing	T2, T3	1	
		3.8	Stabilization.	T2, T3	1	
		3.9	Relevant problems.	T2, T3	2	
			Total		10	

4. WAVE SHAPING CIRCUITS:

4		4.1	Low pass RC circuits (step & square response)	T1, T4	1	

CO3: Construct the wave shaping circuits of non sinusoidal signals. (K3)	4.2	high pass RC circuits (step & square response)	T1, T4	1	Chalk & Talk, Smart Board and PPT
	4.3	High pass RC circuit as a Differentiator,	T1, T4	1	
	4.4	Low passes RC circuit as integrator	T1, T4	1	
		Clipping circuits:			
	4.5	diode clippers,	T1, T4	1	
	4.6	transistor clippers, Transfer characteristics,	T1, T4	1	
	4.7	Slicers	T1, T4	1	
		Clamping circuits:			
	4.8	clamping operations,	T1, T4	1	
	4.9	Clamping circuit theorem, practical clamping circuits	T1, T4	1	
	4.10	Relevant problems.	T1, T4	2	
			Total	11	

OSCILLATORS

5	5.1	Basics of oscillators	T1, T4	1	
	5.2	Oscillator principle, Types of oscillators	T1, T4	1	
	5.3	RC phase shift oscillator	T1, T4	1	
CO4: Analyze and design the Oscillators using BJT(K4)	5.4	Wein bridge oscillator	T1, T4	1	
	5.5	Analysis of LC oscillators	T1, T4	1	
	5.6	Hartly Oscillator	T1, T4	1	
	5.7	Colpitts oscillator	T1, T4	1	
	5.8	Crystal oscillator	T1, T4	1	
	5.9	Relevant problems	T1, T4	2	
			Total	10	
		CUMULATIVE PROPOSED PERIODS		63	

Text Books:
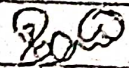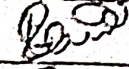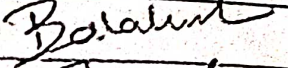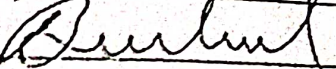
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	J. Millman & C.Halkias -'Electronic devices & circuits'- Tata McGraw Hill Publication. -IInd Edition,2003. (Units – 1,2,3)
2.	Pulse Digital and Switching Waveforms - J. Millman and H. Taub, McGraw-Hill, -IInd Edition, 1991. (Units – 4,5)

Reference Books:

S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION
1.	Sanjeev Gupta –'Electronic devices & circuits'- Dhanpat Rai Publications IV Edition.,2012.
2.	A. Anand Kumar- Pulse and Digital Circuits, PHI.-IV Edition, 2008.
3.	S. Salivahanan, N. Suresh Kumar and A. Vallava Raj, "Electronic Devices and circuits", TMH, 2nd Edition 2008.

Web Details

1.	https://www.electronicsforu.com/resources/electronic-devices-and-circuit-theory
2.	https://www.elprocus.com/types-of-clipper-and-clamper-circuits-and-applications/

		Name	Signature with Date
	Faculty I	Mr. I.V.Ravi Kumar	
i.	Course Coordinator	Mr. I.V.Ravi Kumar	
iii.	Module Coordinator	Dr.K.Balamurugan	
iv.	Programme Coordinator	Dr.B.S.Rao	

Principal