

ELECTRONIC DEVICES AND CIRCUITS

II B. TECH- I SEMESTER								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P		C	CIE	SEE
A4EC01	ESC	3	-	-	3	30	70	100
		<p>COURSE OBJECTIVES: The course should enable the students to:</p> <ol style="list-style-type: none"> To learn principle of operation, construction and characteristics of various electronic devices. To study operation and characteristics of Rectifiers with filters. To understand the analysis of small signal low frequency amplifiers. To provide the concepts involved in design of electronic Circuits. <p>COURSE OUTCOMES: After completing this course, the student will be able to:</p> <ol style="list-style-type: none"> Identify, formulate & solve Engineering problems by making use of modern software/hardware tools. Analyze behaviour of electronic devices. Design and analyze various rectifiers, filter circuits. Design an amplifier circuit with proper biasing techniques (BJT and FET). Analyze Field effect transistor (FET) and mosfet characteristics 						
UNIT-I	P-N JUNCTION DIODE :						CLASSES: 12	
PN JUNCTION DIODE: Operation of PN junction Diode: No bias, forward bias and reverse bias, diode current equation (qualitative treatment), volt-ampere (V-I) characteristics, temperature dependence of V-I characteristics, ideal versus practical diode, static and dynamic resistances, diode equivalent circuits, breakdown mechanisms in semiconductor diodes, zener diode characteristics.								
UNIT-II	RECTIFIERS AND FILTERS :						CLASSES: 12	
The P-N junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Harmonic components in a Rectifier Circuit, Inductor Filters, Capacitor Filters, L Section Filters, π - Section Filters, Comparison of Filters, Voltage Regulation using Zener Diode.								
UNIT-III	BIPOLAR JUNCTION TRANSISTOR AND ITS BIASING						CLASSES: 15	
BIPOLAR JUNCTION TRANSISTOR (BJT): BJT construction, operation, symbol, transistor current components, input & output characteristics of a transistor in CB, CE and CC configurations TRANSISTOR BIASING AND STABILIZATION: Need for biasing, operating point, DC and AC load lines, stability factor, fixed bias circuit, collector to base bias circuit, self bias circuit.								
UNIT-IV	BJT AMPLIFIERS AND FIELD EFFECT TRANSISTOR						CLASSES: 16	
BJT AMPLIFIERS: Operation of CE amplifier, Operation of RC coupled amplifier, Operation of Class A power amplifier, Operation of Class-B Push-Pull power amplifier FIELD EFFECT TRANSISTOR: Junction field effect transistor (construction, principle of operation, symbol), volt-ampere characteristics of JFET, MOSFETS (construction, principle of operation, symbol), volt-ampere characteristics of MOSFETS in enhancement and depletion modes								
UNIT-V	FEEDBACK AMPLIFIERS & OSCILLATORS						CLASSES: 10	
FEEDBACK AMPLIFIERS: Feedback concepts, types of feedback circuits (block diagram representation), general characteristics of negative feedback amplifier OSCILLATORS: Barkhausen criterion, RC Phase shift oscillator using BJT, General form of LC oscillators, Hartley oscillator, Colpitts oscillator and Crystal oscillator.								
TEXT BOOKS:								

<ol style="list-style-type: none">1. Jacob Milliman, Christos C .Halkias, Satyabrata Jit (2015), <i>Electronic Devices and Circuits</i>, 3rd edition, Tata McGraw Hill, New Delhi.2. G. K. Mittal (1999), <i>Electronic Devices and Circuits</i>, 22nd edition, Khanna Publications, New Delhi.3. Robert Boylestad, Lowis Nashelsky (1993), <i>Electronic Devices and Circuit Theory</i>, 5th edition, Prentice Hall of India, New Delhi, India.
REFERENCE BOOKS:
<ol style="list-style-type: none">1. David. A. Bell (1986), <i>Electronic Devices and Circuits</i>, 4th edition, Prentice Hall of India, New Delhi.2. S. Shalivahanan, N. Suresh Kumar, A. Vallavaraj (2007), <i>Electronic Devices and Circuits</i>, 3rd edition, McGraw Hill, New Delhi, India.3. Theodore. F. Bogart Jr, Jeffrey S. Beasley, Guillermo Rico (2004), <i>Electronic Devices and Circuits</i>, 6th edition Pearson Education India
WEB REFERENCES:
<ol style="list-style-type: none">1. https://unacademy.com/course/electronic-devices-gate-ece/JTIAAKX12. https://freevideolectures.com/course/2261/basic-electronics-and-lab/23. https://unacademy.com/lesson/build-in-potential-and-depletion-width/ALHF5QVM
E-TEXT BOOKS:
<ol style="list-style-type: none">1. http://www.freebookcentre.net/electronics-ebooks-download/Electronic-Devices-and-Circuits-(PDF-313p).html2. https://www.goodreads.com/book/show/25345857-electronic-devices-and-circuits3. https://thebookee.net/el/electronic-devices-and-circuits-by-jb-gupta-pdf
MOOC COURSE
<ol style="list-style-type: none">1. https://www.edx.org/2. https://www.coursera.org/learn/electronics