

**SHREE SATHYAM COLLEGE OF ENGINEERING AND TECHNOLOGY**

**Department of EEE**

**SUBJECT CODE: EC 6202**

**SUBJECT NAME: ELECTRONICS DEVICES AND CIRCUITS**

**Regulation: 2013**

**Year and Semester: III**

<b>EC6202</b>	<b>ELECTRONIC DEVICES AND CIRCUITS</b>	<b>L T P C</b>
		<b>3 1 0 4</b>
<b>UNIT I</b>	<b>PN JUNCTION DEVICES</b>	<b>9</b>
PN junction diode –structure, operation and V-I characteristics, diffusion and transient capacitance -Rectifiers – Half Wave and Full Wave Rectifier, – Display devices- LED, Laser diodes- Zener diodeCharacteristics-Zener Reverse characteristics – Zener as regulator		
<b>UNIT II</b>	<b>TRANSISTORS</b>	<b>9</b>
BJT, JFET, MOSFET- structure, operation, characteristics and Biasing UJT, Thyristor and IGBT -Structure and characteristics.		
<b>UNIT III</b>	<b>AMPLIFIERS</b>	<b>9</b>
BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response – MOSFET small signal model– Analysis of CS and Source follower – Gain and frequency response-High frequency analysis.		
<b>UNIT IV</b>	<b>MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER</b>	<b>9</b>
BIMOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FETinput stages – Single tuned amplifiers – Gain and frequency response – Neutralization methods,power amplifiers –Types (Qualitative analysis).		
<b>UNIT V</b>	<b>FEEDBACK AMPLIFIERS AND OSCILLATORS</b>	<b>9</b>
Advantages of negative feedback – voltage / current, series, Shunt feedback –positive feedback –Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillators.		
<b>TOTAL (L:45+T:15): 60 PERIODS</b>		

## **AIM**

To provide clear knowledge of structure of basic electronic devices and to expose the operation and applications of electronic devices.

### **OBJECTIVES:**

#### **The student should be made to:**

- Be familiar with the structure of basic electronic devices.
- Be exposed to the operation and applications of electronic devices.

## **IMPORTANCE AND NEED OF SUBJECT**

- To understand the physical principles of electrical and electronics devices.
- There is a strong emphasis on electronics, from fundamentals of analogue and digital circuits to complex components and systems constructed from them.

## **COURSE OUTCOME (CO)**

1. To explain the structure of the basic electronic devices.
2. To design a applications using the basic electronic devices.
3. To understand the operation and application of amplifiers (Multistage differential)
4. To apply feedback amplifier and oscillators in electrical engineering problems.

## **LATEST DEVELOPMENTS**

- A combined support vector machine –wavelet transform model for prediction of sediment transport in sewer.
- Industrial tomography using three different gamma rays.