

## **13EC2102-ELECTRONIC DEVICES AND CIRCUITS**

(Common toEEE and ECE)

Lectures/Week:4Hrs .

Sessional Marks:40m.

Duration:3Hrs

Univ.Exam.Marks:60

### **UNIT-I**

**OPTO ELECTRONIC DEVICES:** Photo emission, principle of operation of photo conductors – photo diodes, transistors, LED and LCD.

**SPECIAL SEMICONDUCTOR DEVICES:** operation of SCR, DIAC, TRIAC and UJT.

**RECTIFIERS:** Diode equivalent circuit, Half-wave, Full-wave and Bridge rectifiers, Analysis of filters with full wave rectifier.

### **UNIT-II**

**BJT AMPLIFIERS :** BJT biasing schemes, Stability( $I_{CO}$ ,  $V_{BE}$  and  $\beta$ ), Hybrid model, Small signal analysis of single stage BJT amplifiers, Comparison of CE, CB and CC amplifiers, Approximate model analysis, Effects of coupling and bypass capacitors on low frequency response,

### **UNIT-III**

**BJT HIGH FREQUENCY ANALYSIS:** Hybrid- $\pi$  model at high frequencies, Parameters  $f_{\beta}$  and  $f_T$ .

**MULTISTAGE AMPLIFIERS:** Types of coupling, Analysis of multistage amplifiers, overall voltage gain and Bandwidth of n-stage amplifier, Darlington and Bootstrap circuits.

### **UNIT-IV**

**FET AMPLIFIERS:**FET biasing scheme, Small signal model, Analysis of CS &CD amplifiers, High frequency response.

### **UNIT-V**

**FEEDBACK AMPLIFIERS:** Feedback concept, Classification, Effect of negative feedback on gain, Stability, Noise, Distortion, Bandwidth, Input and Output resistance. Different types of feedback circuits without analysis.

**SINUSOIDAL OSCILLATORS:** Barkhausen criterion, RC phase shift, Wien Bridge, Hartley, Colpitt's and Crystal oscillator.

### **TEXT BOOKS:**

1. Mottershed, "Electronic devices and circuits", PHI.
2. Millman and Halkias, "Integrated Electronics", McGraw- Hill Co.

### **REFERENCE BOOKS:**

- 1.Boylestad, Louis Nashelsky "Electronic devices and circuits" 9ed., 2008PE.
2. David.A.Bell. "Electronic Devices and circuits", PHI.
3. Adel S.Sedra,Kenneth C.Smith, "Micro Electronic Circuits", Holt Sander's Japan.