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

(Common to EEE and ECE)

 Credits: 4

Lectures/Week: 4Hrs. Sessional Marks: 40 Univ. Exam.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(Ico,VBE and β), 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-π model at high frequencies, Parameters fβ and fT.

**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, Colpitts and Crystal oscillator.

**TEXT BOOKS:**

1. Mottershed, “Electronic devices and circuits”, PHI.

2. Millman and Halkias, “Integrated Electronics”, McGraw- Hill Co.

**REFERENCES:**

1. Boylestad, Louis Nashelsky “Electronic devices and circuits” 9ed.., 2008 PE.

2. David.A.Bell. “Electronic Devices and circuits”, PHI.

3. Adel S.Sedra, Kenneth C.Smith, “Micro Electronic Circuits”, Holt Sander’s Japan.