

Code: EC2T5

I B.Tech - II Semester – Regular Examinations – JULY 2015

**ELECTRONIC DEVICES & CIRCUITS
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1. a) List out the applications of CRO.
- b) What are the front panel controls of CRO
- c) Draw the symbol of photo diode, Zener diode and Varactor diode.
- d) What is meant by thermal runaway and thermal stability?
- e) Define form factor and peak factor.
- f) Define early effect in transistor CB configuration.
- g) Write expressions for I_{rms} , I_{dc} , V_{rms} , V_{dc} .
- h) Define stability factor.
- i) Give the typical transistor junction voltage values.
- j) What is diffusion capacitance?
- k) Differentiate JFET and MOSFET.

PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) Explain in detail about Magnetic deflection sensitivity.
Derive the expression for deflection sensitivity. 10 M

b) Analyze the motion of electron under parallel electric and magnetic fields. 6 M

3. a) Draw the energy and diagram of a PN junction and explain the working of a PN Junction diode. 8 M

b) Explain about the avalanche breakdown and zener breakdown with neat sketch. 8 M

4. a) Derive the ripple factor of a full-wave rectifier with shunt capacitor filter. 8 M

b) Draw the circuit diagram of a Half wave rectifier. Explain the operation and derive the expression for I_{dc} and V_{dc} . 8 M

5. a) Draw the circuit diagram of an NPN junction transistor CE configuration and describe the static input and output characteristics .Also defines active, saturation and cutoff regions. 10 M

b) Explain the four distinct regions of the output characteristics of a JFET. 6 M

6. a) Derive an expression for the stability factor of a collector to base bias circuit. 8 M

b) Explain in detail about the biasing of FET. 8 M