

Code: R7100207

B.Tech I Year (R07) Supplementary Examinations, June 2013

BASIC ELECTRONIC DEVICES & CIRCUITS

(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Derive the equation for deflection sensitivity for electrostatic deflection.
(b) Explain the working of a CRT with a neat diagram.
- 2 (a) With a neat diagram, explain about electric field intensity and potentials in a open circuited PN junction.
(b) With a neat diagram explain the working principle and $V - I$ characteristics of a tunnel diode.
- 3 (a) Draw the circuit of a full wave rectifier and explain its working with neat input and output wave forms.
(b) Derive the expression for ripple factor of a full wave rectifier with capacitor filter.
- 4 (a) Explain the working and $V - I$ characteristics (both input and output) of a transistor in CE configuration.
(b) With a neat diagram explain the working of an SCR. Also give its $V - I$ characteristics.
- 5 (a) Draw the self bias circuit of a BJT and derive expressions for V_{CE} and I_C .
(b) Explain the need for temperature compensation in a BJT and discuss about compensation techniques.
- 6 (a) Draw h-parameter model of a BJT in CE configuration and derive the expressions for A_i , A_v , R_i and R_o .
(b) Give the small signal model of a FET amplifier and give the voltage gain expression in CD configuration.
- 7 (a) Describe the general characteristics of negative feedback amplifiers.
(b) Draw the circuits of voltage shunt and series feedback amplifiers and discuss about their working principle.
- 8 Write short notes on the following:
 - (a) RC phase shift oscillator.
 - (b) Crystal oscillators.
