

USELT02 - Electronics Paper-II (Semiconductor Diodes and Analog Electronics)

P. Pages : 2

Time : Three Hours



GUG/W/22/11549

Max. Marks : 50

- Notes :
1. All questions are compulsory and carry equal marks.
 2. Draw neat and labelled diagrams wherever necessary.
 3. Use of log table/calculator is allowed.

Either :

1. a) Explain the construction of p-n junction diode with suitable diagram. **5+5**
Explain forward characteristics of p-n junction diode with suitable diagram.

OR

- b) Explain the construction & working of Schottky diode. **6+4**
Differentiate between Avalanche and Zener breakdown.

Either :

2. a) Explain the construction and working of halfwave rectifier with its input and output waveforms. **6+4**
Differentiate between halfwave & Bridge full wave rectifier.

OR

- b) Explain the role of capacitor in DC power supply. **4+6**
Explain Zener diode as a voltage regulator.

Either :

3. a) Explain the output characteristics of transistor in CE mode. **6+4**
Derive the relation between α (alpha) and β (Beta).

OR

- b) Explain the fixed bias method of transistor with suitable diagram. **6+4**
State its disadvantages.
What is thermal runaway in transistor? How can it be overcome?

Either :

4. a) What is two port network? Determine h-parameters for it. **6+4**
Draw h-parameter equivalent circuit for CB configuration and define its h-parameters.

OR

- b) Derive the expression for input impedance of CE configuration in terms of h-parameters. **4+6**

Derive the expression for low voltage gain of RC coupled amplifier using h-parameters.

5. Attempt **any ten** of the following: **1x10**
=10

- a) What is static resistance of diode?
- b) What is immobile ions in depletion region?
- c) Define reverse saturation current
- d) What is rectifier?
- e) Define ripple factor.
- f) Define line regulation.
- g) Draw symbol of NPN & PNP transistor.
- h) Define α and β .
- i) What is stability in transistor biasing circuit?
- j) What is hybrid parameter?
- k) Define voltage gain.
- l) State any two advantages of RC coupled amplifier.
