

[07 – 2101]

II/IV B.Tech. DEGREE EXAMINATION.

First Semester

Computer Science Engineering

ELECTRONICS – I

(Effective from the admitted batch of 1999–2000 and after batches)

Time : Three hours

Maximum : 70 marks

First question is compulsory.

Answer any FOUR from the remaining questions.

All questions carry equal marks.

Answer all parts of any questions at one place.

1. (a) Define drift and diffusion currents in PN junction diode.
- (b) Working principle of Zener diode.
- (c) Draw the simplest possible transistor amplifier.
- (d) Draw V-I characteristics of Tunnel diode.
- (e) In brief explain what is a multi stage amplifier.

- (f) With neat sketch explain the working of half wave rectifier.
- (g) What is thermal runaway in transistors?
2. (a) What are the applications of hall effect and describe the method of determination of N or P type of materials.
- (b) Explain about forward and reverse bias of PN junction diode with neat diagrams.
3. (a) Explain the currents in PN junction diode with neat diagram.
- (b) The current in the reverse biased PN junction diode made of Ge is $0.2 \mu\text{A}$. When the applied voltage is 0.1 V . Find the current at room temperature. Also find out the current in Si diode.
4. (a) Obtain the relation between α , β and γ .
- (b) If the emitter current; $I_E = 1.1 \text{ mA}$ and $\beta = 50$, find α , I_B and I_C .
5. (a) List and explain the transistor biasing techniques.
- (b) Derive an expression for stability factor S of fixed bias transistor circuit.
6. (a) With neat diagram explain the construction of Enhancement MOSFET.
- (b) Give the differences between BJT and MOSFET.
7. (a) Draw Full wave bridge rectifier circuit with inductor filter and with output wave forms. Obtain the expression for it's ripple factor.
- (b) Compare the characteristics of half wave and Full wave bridge rectifiers.
8. Write short notes on
 - (a) SCR
 - (b) Bias compensation
 - (c) h parameters.