Roll No. ..... Total Pages : 03

BT-3/D-22 **43145**

ELECTRONIC DEVICES

FC-201A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

1. (a) Sketch an energy band diagram, and explain conduction band, valence band and forbidden gap in details. **10**

(b) Draw a diagram to illustrate drift current in a semiconductor material. Briefly explain. **5**

2. (a) Describe the negative and positive shunt clipping circuits and explain the operation of each circuit. **8**

(b) Explain the current flow in a forward biased PN junction with relevant expression for minority carrier concentration and diagram to illustrate the carrier density close to depletion layer. **7**

Unit II

3. (a) Draw and explain the practical transistor CE amplifier. Also explain the function of each component. **8**

   (b) Explain basic principle of operation of BJT as amplifier. Also explain all the operative modes of BJT. **7**

4. (a) Draw and explain H parameters of CE Transistor. **8**

   (b) Give comparison of CB, CC, CE configurations. **7**

Unit III

5. Explain the following terms in detail : **15**

   (a) Pinch off voltage

   (b) Channel length modulation.

   (c) Velocity saturation

   (d) AC drain resistance

   (e) Amplification factor.

6. What is MOSFET ? Explain the construction and characteristics of N channel MOSFET with a suitable diagram. **15**

Unit IV

7. (a) Outline the construction of Zener voltage regulator with a neat circuit diagram. **5**

(b) With a neat sketch, explain the working of Op-Amp Shunt voltage regulator. 10

8. Write short notes on any *three* of the following : 5×3=15

(a) Controlled Transistor shunt voltage regulator

(b) Op Amp Series voltage Regulator

(c) MOS capacitor

(d) DC Regulated power supply.