Roll No. ..... Total No. of Pages : 2

BT-3/D11 7606

Semiconductor Devices and Circuits

Paper : ECE-201 E

Time : Three Hours] [Maximum Marks : 100

Note :– Attempt any **FIVE** questions.

1. (a) How does a PN Junction work as a rectifier ? Compare rectifier circuits. 10
   (b) Explain photoelectric devices and their principle of working. 10
2. (a) Draw a series voltage regulator. How does it work ? 10
   (b) Draw block diagram of SMPS. Explain its working. 10
3. Explain the following :-
   (a) Miller's theorem
   (b) Early effect in transistors
   (c) Hybrid model of a transistor
   (d) Thermal runaway in transistors. 5×4=20
4. Explain the following :-
   (a) Bias Compensation
   (b) Thermistor
   (c) High frequency limitation of BJT
   (d) Emitter follower. 5×4=20
5. (a) What is the need of feedback ? What is its impact on input resistance, gain, Bandwidth and output impedance ? 10
   (b) Draw various feedback topologies. What are their applications ? Compare their features. 10

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6. (a) What are various amplifiers ? Compare their features and obtain their efficiencies. 10
   (b) Draw circuit of a crystal oscillator. How does it work ? How is it better than weinbridge oscillator ? 10
7. (a) Draw the construction of a V-MOSFET. How does it work ? What are its applications ? 10
   (b) Write short notes on enhancement type MOSFET. 10
8. Explain the following terms and write short notes on :-
   (a) Biasing of MOSFETS 10
   (b) JFET. 10

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