

Roll No.

24024

**B. Tech 3rd Semester (EEE)
Examination – December, 2017**

ELECTRONIC DEVICES & CIRCUITS

Paper : EE-201-F

Time : Three Hours] [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) Define valence band, conduction band and energy gap. 5
- (b) Why the temperature coefficient of resistance of a semiconductor is negative. 5
- (c) What are applications of photodetectors? 5
- (d) Difference between Ohmic & Saturation region. 5

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2. What is superconductivity ? What are characteristics and application of superconductors ? 20
3. Draw energy band in Lithium, Beryllium and Diamond. 20
4. (a) Explain the concept of continuity equation in a semiconductor. 10
 (b) Differentiate between Diffusion capacitance & transition capacitance. 10
5. (a) Explain briefly planar technology for device fabrication. 10
 (b) Explain operation and characteristics of solar cell. 10
6. Explain operation, construction and characteristics of MOSFET. 20
7. Explain construction working and characteristics of CE configurations. 20

8. (a) Describe the construction and working of IGBT. 10
 (b) Explain the working of TRIAC along with V-I characteristics. 10

9. Write short notes on the following :

- (a) Semiconductor lasers 10
 (b) Gumm diode 10