No. of Printed Pages : 3 **Roll No. .....**

W112

B. Tech. (Weekend) EXAMINATION, May 2019

(First Semester)

(Re-appear Only)

(EE, ECE)

EEW101/ECEW101

ELECTRICAL ENGINEERING MATERIALS AND SEMICONDUCTOR DEVICES

Time : 3 *Hours*] [*Maximum Marks :* 100

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

Note : Attempt any *Five* questions out of given eight.

1. (a) Differentiate semiconductors, insulators and conductors on the basis of band theory. **10**

(b) Enumerate the factors affecting the conductivity of semiconductors. **10**

2. (a) Explain the concept of polarizability and succeptibility. **10**

(b) Compare the concepts with examples of magnetostriction and piezoelectricity. **10**

3. Explain the following concepts : **20**

(a) Magnetic permeability

(b) Hysteresis loss

(c) Types of magnetic materials

(d) Eddy currents

4. (a) State, derive and explain continuity equation. **10**

(b) Explain drift and diffusion mechanism in semiconductors. **10**

5. (a) Explain the various methods involved in construction of transistor. **10**

(b) Explain how diodes are electrically and optically excited. **10**

6. (a) Explain the symbol, structure and working of MOSFET. **10**

(b) Explain working of UJT as relaxation oscillator. **10**

7. Explain the working, symbol, structure characteristics of the following : **20**

(a) GTO

(b) IGBT

8. Write short notes on the following : **20**

(a) Solar Cell

(b) VMOS