



VIT
Vellore Institute of Technology
(Approved as the University level institution I of UGC Act, 1956)

Continuous Assessment Test – I

Programme Name & Branch: B.Tech and ECE

Course Code & Name: ECE1006-Introduction to Nanoscience and Nanotechnology

Class Number: VL2019201001488, 1492, 1496

Slot: A1

Exam Duration: 90 mins

Date: 18-08-2019

Maximum Marks: 50

General instructions:

- Calculators are allowed!
- Answer should be specific to the questions.
- Point by point answer is highly recommended instead of writing paragraphs

Questions

1. ✓ Identify and explain about a distribution function that obeys Pauli exclusion principle and find the probability of electron occupancy at $T=0$ K below and above the Fermi level with proper plot. (10)
2. ✓ Explain about the band theory of solids? Using the band theory, classify solid materials based on their electrical conductivity. (12)
3. ✓ Justify with proper mathematical derivation that the energy of electrons is confined in two dimensions and free to move in one dimension for quantum wires. (13)
4. ✓ Discuss about the following material properties at nanoscale, (a) Electronic (b) Optical (c) Magnetic (15)

