

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 2019

Course Code: EE206

Course Name: MATERIAL SCIENCE (EE)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks

- 1 Define polarization and what are different polarization processes? (5)
- 2 Explain the properties of Mica and Ceramics. (5)
- 3 List any five characteristics of SF₆. (5)
- 4 Explain Curie Weiss law. (5)
- 5 Explain superconductivity and its applications. (5)
- 6 What are the materials used for solar cells? Explain. (5)
- 7 Write short notes on bio materials. (5)
- 8 What is photoelectron spectroscopy? Explain. (5)

PART B

Answer any two questions, each carries 10 marks

- 9 a) Derive Clausius-mosotti relation. (5)
b) What are compound semiconductors? (5)
- 10 a) Differentiate organic and inorganic insulators. (4)
b) Why SF₆ gas is used in circuit breakers? (3)
c) What are the insulating materials used in capacitor materials? (3)
- 11 a) Explain different types of polarizations in dielectrics. (6)
b) What do you mean by insulating materials? Explain its classification based on temperature. (4)

PART C

Answer any two questions, each carries 10 marks

- 12 a) Explain streamer theory of breakdown in gases. (6)
b) Define suspended particle theory. (4)
- 13 a) Explain properties and applications of iron. (6)
b) Explain the applications of magnetic materials in electrical machines. (4)
- 14 a) How breakdown occur in vacuum insulators? Explain any one mechanism. (6)

- b) Explain transformer oil treatment method. (4)

PART D

Answer any two questions, each carries 10 marks

- 15 Explain
1. Antireflection coating
 2. Solar selective coating (10)
 3. Cold mirror coating
- 16 a) Explain atomic absorption spectroscopy. (5)
- b) Explain the different characteristic properties of superconductors. (5)
- 17 Explain different types of electron microscopy and their applications. (10)
