

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

Course Code: EE206

Course Name: MATERIAL SCIENCE (EE)

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks

		Marks
1	What is electrical conductivity? Obtain the expression for electrical conductivity of a metal.	(5)
2	Explain the properties SF6 gas as an insulator.	(5)
3	List the factors which affect ageing of insulator.	(5)
4	Write short notes on ferrites.	(5)
5	What is superconductivity? Give the applications of superconductor.	(5)
6	What are the classifications of solar cell? Explain.	(5)
7	What is optical microscopy?	(5)
8	What are the limitations of optical microscopy? Give one merit of scanning electron microscopy compared to optical microscopy.	(5)

PART B

Answer any two questions, each carries 10 marks

9	Explain Clausius Mosotti relation.	(10)
10	Describe the applications of following insulating materials used in electrical apparatus: i) Liquid insulator ii) Gaseous insulators iii) Organic insulator iv) Inorganic insulator	(10)
11	Distinguish between electronic and ionic polarization. How do they depend on frequency?	(10)

PART C

Answer any two questions, each carries 10 marks

12	Explain streamer mechanism of spark.	(10)
13	Explain the classification of magnetic materials with example.	(10)
14	a) Explain the properties and application of alloys of iron.	(7)
	b) What are the application of vacuum insulation.	(3)

PART D

Answer any two questions, each carries 10 marks

15	a) What is Type-I and Type-II superconductors?	(6)
	b) What is atomic absorption spectroscopy?	(4)
16	Explain the construction and working of organic solar cell.	(10)
17	a) What is biocompatibility?	(2)
	b) What are the properties of nanotubes?	(3)
	c) What is photoelectron spectroscopy?	(5)
