

D

D192058

Pages: 2

Reg No.: _____

Name: _____

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

Course Code: EE206

Course Name: MATERIAL SCIENCE

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks

Mark

- 1 Explain how the conductivity of conducting materials vary with temperature and composition (5)
- 2 What do you mean by ferroelectricity? Name any two ferroelectric materials. (5)
- 3 What are the factors influencing ageing of insulators? (5)
- 4 Differentiate between soft and hard magnetic materials. (5)
- 5 What are the materials used for the solar cell? (5)
- 6 Why solar selective coating is used in solar system? (5)
- 7 What do you mean by optical microscopy? Explain with diagram. (5)
- 8 How the nanomaterials are classified? (5)

PART B

Answer any two questions, each carries 10 marks

- 9 a) Explain the behaviour of dielectrics in alternating field. (7)
b) Name any three alloys of copper and explain its composition. (3)
- 10 a) Explain physical and chemical properties of SF₆. (6)
b) What are the polymeric organic materials used in electrical apparatus? (4)
- 11 a) Why SF₆ gas is mixing with nitrogen for industrial applications? (4)
b) What are the materials used for solders and contacts? (6)

PART C

Answer any two questions, each carries 10 marks

- 12 a) Explain the mechanism of breakdown in gases dielectrics (7)
b) Why transformer oil testing is so important? (3)
- 13 a) Explain the classification of magnetic material based on magnetic dipoles. (6)
b) What is ferrites? Explain its properties (4)
- 14 a) Derive the Townsends current growth equation for primary ionization. (5)
b) Write five applications of iron alloys. (5)



PART D

Answer any two questions, each carries 10 marks

- 15 a) Explain the Photo-thermal solar energy conversion with figure. (6)
b) What are the main applications of superconducting materials? (4)
- 16 a) Draw and explain the schematics of Atomic Absorption Spectroscopy (10)
- 17 a) What are the organic solar cells? Explain its advantages. (6)
b) Write short notes on importance of biomaterials. (4)
