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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

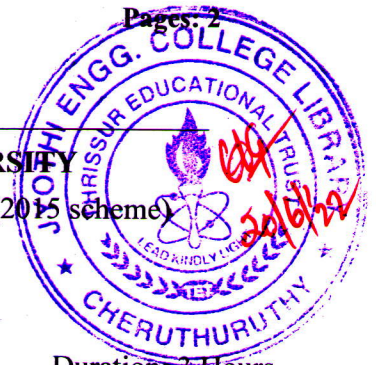
Fourth Semester B.Tech Degree (S,FE) Examination June 2022 (2015 scheme)

Course Code: EE206

Course Name: MATERIAL SCIENCE (EE)

Max. Marks: 100

Duration: 3 Hours



PART A

Answer all questions, each carries 5 marks

- 1 List out any 5 differences between conductors, semiconductors and insulators. (5)
- 2 Describe the properties and applications of ferroelectrics. (5)
- 3 Explain transformer oil testing. (5)
- 4 State Curie Weiss Law and explain its relevance. (5)
- 5 List out the applications of superconductor. (5)
- 6 What are merits and demerits of solar energy conversion? (5)
- 7 Discuss the relevance of biomaterials. (5)
- 8 Explain photoelectron spectroscopy? (5)

PART B

Answer any two questions, each carries 10 marks

- 9 a) Derive Clausius Mosotti Relation. (7)
b) How does temperature affect resistivity of metals? (3)
- 10 a) What is Dielectric Constant? (3)
b) What are the various insulating materials used in capacitors? Explain their characteristics. (7)
- 11 a) Write a short note on compound semiconductors. (5)
b) Discuss the various classifications of insulating materials. (5)

PART C

Answer any two questions, each carries 10 marks

- 12 a) Explain any two breakdown mechanism in solid dielectrics? (4)
b) Explain suspended particle theory of breakdown. (6)

- 13 Classify various magnetic materials based on magnetic susceptibility. Point out the differences between these materials. (10)
- 14 a) What are factors affecting ageing of insulators? (5)
- b) Explain the origin of magnetic dipoles. (5)

PART D

Answer any two questions, each carries 10 marks

- 15 Explain photovoltaic conversion with the help of a block diagram. Discuss the various materials used in a solar cell. (10)
- 16 With a block diagram, explain atomic absorption spectroscopy. (10)
- 17 a) Explain the properties of superconductor. (5)
- b) Write a short note on nanomaterials. (5)
