Reg. No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FOURTH SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2017

Course Code: **EE206**

Course Name: **MATERIAL SCIENCE (EE)**

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 5 marks.

1. Obtain the expression for the conductivity of an intrinsic semiconductor.
2. What are the common Dielectric materials used in Electrical apparatus.
3. Explain the term Electron Attachment.
4. What is the relevance of Curie – Weiss law?
5. What are organic solar cells?
6. Why certain materials exhibit superconductivity?
7. What is the scope of biomaterials in medicine?
8. Write notes on nano tubes

PART B

Answer any 2 questions. Each question carries 10 marks.

9. a. What is the effect of alloying of metals in their conduction? Illustrate with an example. (6)

   b. What is the effect of imperfections in lattice structure on the resistivity of pure metals? (4)

10. a. What are the applications of thermoplastics and thermo setting plastics? (5)

    b. Write notes on ferrites mentioning their properties and applications. (5)

11. a. Why SF6 gas is used in Circuit breakers? (5)

    b. Which are the materials used in capacitor as insulatotors and why? (5)

PART C

Answer any 2 questions. Each question carries 10 marks.

12. Explain streamer theory of breakdown in air. (10)

13. Explain the phenomenon treeing and tracking in solid insulating materials under Electrical stress. How this leads to breakdown? (10)

14. a. Write notes on hard and soft magnetic materials specifying examples and applications. (5)

    b. Write about the origin of magnetic dipoles. (5)

PART D

Answer any 2 questions. Each question carries 10 marks.

15. a. What do you mean by superconductivity? Explain the application and properties. (7)

    b. What are the materials commonly used for making solar cells? (3)

16. Write notes on a) optical microscopy and b) Electron microscopy. (10)

17. a. Explain various bio materials used in medicine. (6)

    b. What are nano materials? Give two applications. (4)

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