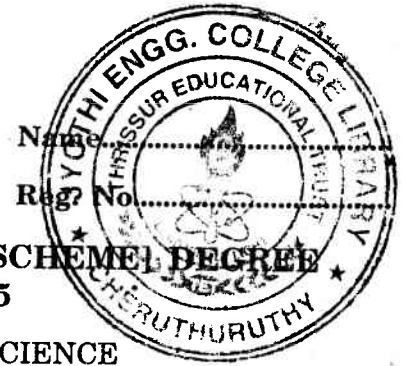**D 90153**   (Pages 2)

FIFTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2015

EE/PTEE 09 506—ELECTRICAL MATERIAL SCIENCE

Time : Three Hours   Maximum : 70 Marks

Part A

1. Define Weiss law.

2. Give the properties of wire.

3. What is meant by dielectric loss ?

4. Write the electrical properties of mica.

5. What is a solar cell ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. Why carbon is preferred for brushes in electrical machines ?

7. Write short notes on electrical properties of semiconducting materials.

8. Give the temperature classification of insulating materials with minimum *two* examples for each class.

9. Write short notes on Ferro electricity.

10. Give the factors influencing the dielectric strength of capacitor materials.

11. What are the differences between heat mirror and cold mirror coatings ?

(4 × 5 = 20 marks)

Part C

Answer all *questions.*

12. (a) Discuss the factors affecting the resistivity of conducting materials.

Or

    (b) Explain free electron theory of metals.

13. (a) Explain about dipolar relaxation.

Or

    (b) Explain domain theory and hysteresis curve of a ferromagnetic material.

Turn over

14. (a) Explain the breakdown mechanism of gaseous insulating materials.

Or

(b) Derive an expression for polarization in solids and liquids.

15. (a) Explain solar photovoltaic conversion. Also discuss the characteristics of the solar cell.

Or

(b) Explain photo thermal conversions.

(4 × 10 = 40 marks)