



Reg. No. :

Name :

**Fourth Semester B.Tech. Degree Examination, July 2015
(2008 Scheme)**

Branch : Electrical and Electronics

08.405 : ENGINEERING MATERIAL SCIENCE (E)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **All** questions carry **4** marks **each**.

1. Explain difference between 'photo ionisation' and 'photo electric emission'.
2. What are the advantages of vacuum insulation ?
3. What is 'corona discharge' ?
4. What is meant by 'commercial liquid dielectrics and how do they differ from pure liquid dielectrics ?
5. What is 'thermal breakdown' in solid dielectrics and how is it practically more significant than other mechanisms ?
6. Explain the accelerated life test for solid dielectrics.
7. What do you mean by 'magnetostriction' ?
8. Write notes on ferrites.
9. Mention the properties of Thyrites and ZnO.
10. Mention few applications of super conductivity. **(4×10= 40 Marks)**



PART – B

Answer **any one full** question from each Module. **Each** question carries **20** marks.

Module – I

11. a) Explain the various processes that produce the electrical discharge on gaseous dielectrics.
- b) Explain Townsend mechanism of breakdown in gaseous insulations.

OR

12. a) Discuss Townsend's secondary ionization co-efficients.
- b) Explain the following :
- Streamer mechanism
 - Penning effect.

Module – II

13. a) Explain the various mechanisms of breakdown in commercial liquid .
- b) Explain the following with respect to solid dielectrics.
- Breakdown due to 'internal discharges'.
 - Breakdown due to 'treeing' and tracking'.

OR

14. a) Discuss the properties of polyethylene, cross linking polyethylene and poly propylene films.
- b) What are the properties and applications of paper, rubber, mica and glass as dielectric materials ?

Module – III

15. a) Discuss the properties of silver, gold, nickel, molybdenum and Tungsten used as the material for resistors.
- b) Explain B-H curve for a magnetic material showing different regions in it. How do it differ for soft and hard magnetic materials ?

OR

16. a) What do you mean by 'annealing' ? Also explain the properties of grain oriented steel.
- b) Describe the properties and applications of silicon, germanium, diamond, graphite and selenium.

(20×3= 60 Marks)