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Roll No.

3rd Sem. / IC / Eltx / ME /Comp / PE / E&E

**Subject : Electrical and Electronics Materials
and Components**

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) Draw energy band for semiconductor materials.
 - b) Silver is an insulating material. (True /False)
 - c) Define low resistivity material.
 - d) Write any tow applications of aluminium.
 - e) Expand PVC.
 - f) What is superconductivity ?
 - g) Varnish is used for _____.
 - h) Define permeability.
 - i) Material used for fuse are _____.

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- j) Define capacitance.
- k) What is metal film resistor ?
- l) Define breakdown voltage.
- m) SI unit of resistance.
- n) Write any tow applications of inductors.
- o) SMD stands for _____.
- p) What is use of connector ?
- q) Expand FET.
- r) IC stands for _____.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Draw atomic structure of silicon and germanium.
 - ii) What are different factors affecting resistivity of conducting materials?
 - iii) What are the applications of brass ?
 - iv) What are different properties of Bakelite ?

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- v) What are different types of magnetic material?
- vi) What are the applications of soft magnetic materials ?
- vii) Explain bimetals and their applications.
- viii) What are different types of capacitor ? Explain
- ix) What is di-electric ? What is its effect on capacitance ?
- x) What are variable type resistors ? Give examples of variable types resistors.
- xi) Why there is need of shielding in inductors ?
- xii) What are the applications of relay ?
- xiii) Explain different types of cables.
- xiv) Explain the method for testing of transistor.
- xv) Explain basic characteristics of semi-conductor materials.

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SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 On the basis of atomic structure, write comparison between conducting, semiconducting and insulating materials.
- Q.4 What is the principle of thermocouple ? Explain different thermocouple materials. Also write its applications.
- Q.5 Explain various engineering materials necessary for the fabrication of transformers.
- Q.6 Explain constructional detail of SMD. Also write its specifications.
- Q.7 Explain in detail, hybrid IC technology.

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