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**EX-402 (GS)**

**B.E. IV Semester**

Examination, November 2019

**Grading System (GS)**

**Electrical and Electronics Materials**

*Time : Three Hours*

*Maximum Marks : 70*

*Note :* i) Attempt any five questions.

ii) All questions carry equal marks.

1. What are the important characteristics and requirement of the various groups of resistor materials based on their practical applications?
2. Mention properties and applications of following insulating materials:
  - i) Glass
  - ii) PVC
  - iii) Bakelite
  - iv) Transformer oil
3. Write the characteristics and applications of
  - i) LED
  - ii) Photodiode
4. Discuss in detail the different types of polarization in dielectrics.

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PTO

5. a) Explain various steps for fabrication of BJT.  
b) Describe the characteristics of IC components.

6. What are the factors those affect the resistance of the conducting materials. Describe in detail with temperature co-efficient equation.

OR

The critical field for Niobium is  $1 \times 10^5$  Amp./m. at 8 K and  $2 \times 10^5$  Amp./m. at 0 K. Calculate the critical temperature of the material.

7. Discuss the following
  - i) Thermal conductivity of semiconductors
  - ii) Electrical conductivity of doped materials.

OR

Explain semiconductor laser its characteristics and applications.

8. Write short notes on: (any three)
  - a) Soft and hard magnetic materials
  - b) Fuel cells
  - c) Properties of ceramic and uses
  - d) Light dependent resistors
  - e) Underground cables

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