**RAJ KUMAR GOEL INSTITUTE OF TECHNOLOGY & MANAGEMENT, GZB**

**1st Sessional Examination 2017-18 ( Odd Semester)**

**Roll No.:**  **Subject Name: Power Electronics**

**Year/Branch**: **EN Subject Code:** **NEE-502**

**Max Time: 1Hours 30 Minute Max Marks: 50**

**SECTION-A**

**Q.1 Attempt all parts carry equal marks. Write answer of each part in short. (2x5=10)**

(a) Define power electronics.

(b) Give applications of thyristors.

(c) Explain the term laching current and holding current . Compare them?

(d) Explain how freewheeling taking place inherently in a semiconverter?

(e) Difference between symmeterical and asymmetrical semiconverter.

**SECTION-B**

**Note: Attempt any five questions from this section. (5x5=25)**

**Q.2** Draw the static V-I characteristics of SCR and explain its modes of operation.

**Q.3** Explain the operation of Power doide with the help of characteristics.

**Q.4** Explain the working of single phase half wave controlled rectifier for R load .Derive an expression for average value of output voltage for single phase half wave controlled rectifier with R load.

**Q.5** Explain the working of single phase half wave controlled rectifier for R–L load using freewheeling diode.

**Q.6** Explain the working of single phase full wave controlled rectifier for R–L load using freewheeling diode.

**Q.7** Explain the working of single phase half wave controlled rectifier for RLE load .

**Q.8** Explain the working of single phase symmetrical semiconverter for RL load .

**Q.9** Analyse the control techniques used in chopper.

**SECTION-C**

**Note: Attempt any two questions from this section. (7.5x2=15)**

**Q.10** A single phase half controlled bridge rectifer supplies a ripple free load current of 20A and operates from the 230V, 50Hz main. If the average output voltage is 95V calculate: (a) Firing angle (b) RMS output voltage (c) RMS supply current (d) RMS 7th harmonic supply current (e) Supply power factor.

**Q.11** Explain the working of single phase asymmetrical semiconverter for RL load and R load.

**Q.12** Describe the working of step down chopper and derive expression for average output voltage.