Mohit Garg

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 EXAMINATION- MARCH -2019
B. Tech. VI Semester

COURSE CODE: 11B1WEC611   MAX. MARKS: 25

COURSE NAME: Power Electronics

COURSE CREDITS: 4   MAX. TIME: 1.5 HRS

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. A single phase full wave controlled rectifier is used to supply a resistive load of 10 Ω from a 230 V, 50 Hz, supply and firing angle of 90°. What is its average output voltage? If a large inductance L and battery emf E=100 V is added in series with the load resistance, what will be the new average output voltage? Derive the expressions used and sketch the waveforms of source voltage, output voltage, output current and source current. **(8 marks)**

2. A 3-phase half converter is connected to purely resistive load. For a firing angle delay of 30°, draw output voltage and load current waveforms. **(5 marks)**

3. A single-phase half-wave diode rectifier is operated from 230 V, 50 Hz source and the load resistance is R=12 Ω. Calculate a) the rectification efficiency   b) form factor   c) voltage ripple factor d) transformer utilization factor e) input power factor **(6 marks)**

4. a) What are the different methods for turning-on an SCR? Explain in detail.   **(4 marks)**
   b) How and why the isolation is provided in SCR circuits?   **(2 marks)**