



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-II Summer 2025	
Exam Seat No.:	
Academic Year: 2024-2025	Semester: IV
Class: SY	Program: B.Tech
Branch Code: ELE	Pattern: 20
Name of Course: Power Electronics	Course Code: 2306213
Max. Marks: 30	Duration: 1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 02 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last column indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Marks CO

Question No. 1

- 1 a) Enumerate the different Turning ON methods of SCR. Explain any two methods. (7) CO1

Question No. 2

- 2 a) Draw the construction diagram of MOSFET and explain the working of the same with the help of transfer and VI characteristic. (8) CO1

OR

- 2 b) Draw switching characteristics of SCR and indicate all the time durations. (4 Marks) (8) CO1

Explain the process Turn ON and Turn OFF with the help of characteristics. (4 Marks)

Question No. 3

- 3 a) Draw the circuit diagram and explain the working of a single fully controlled bridge converter with RL load. Also, draw corresponding waveforms. (do not derive average and RMS voltage expressions) (7) CO2

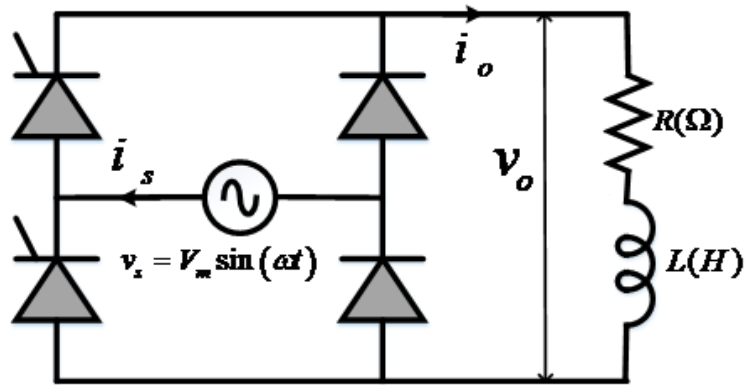
Question No. 4

- 4 a) A 230V, 50Hz single-phase AC supply is connected to a load of RL series load through the semi-controlled converter. The resistance is 15 Ohm and inductance is sufficiently high to maintain constant current. If the firing angle is 30 degrees, calculate (8) CO3
- (i) Average output voltage and current (3 marks)
 - (ii) RMS output voltage and current (3 marks)
 - (iii) Form factor and voltage ripple factor (2 marks)

OR

- 4 b) For the following circuit, derive the formula for average voltage and current, rms voltage and current.

(8) CO3



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