Code No: 155CU **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, February - 2022
POWER ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1. Explain various methods for SCR commutation with neat sketches. [15]

2. Elucidate gate driver circuit for BJT and MOSFET with neat sketches. [15]

3. With a neat circuit diagram explain working of single phase dual converter with output waveforms. [15]

4. With a neat circuit diagram, explain principles of three-phase fully-controlled converter operation with RLE load converter with output waveforms. [15]

5. The dc converter shown in figure 1 has a resistive load of R = 10 Ohms and the input voltage is Vs = 220 V. When the converter switch remains on, its voltage drop is v_{ch} = 2 V and the chopping frequency is f = 1 kHz. If the duty cycle is 50%, determine
a) The average output voltage Va,
b) The rms output voltage Vo [7+8]

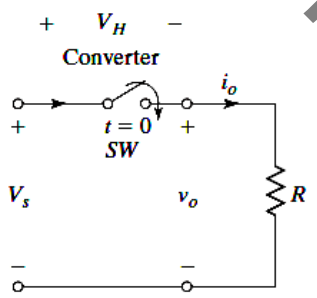

Figure 1

6. A converter is feeding an RL load as shown in Figure 2 with Vs = 220 V, R = 5 Ohms, L = 7.5 mH, f = 1 kHz, k = 0.5, and E = 0 V. Calculate
a) The maximum peak-to-peak load ripple current,
b) The average value of load current Ia, [7+8]

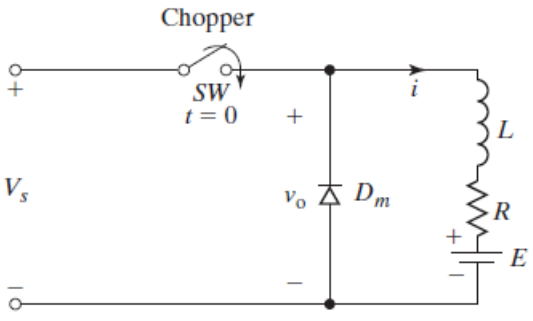

Figure 2

7. With a neat circuit diagram, explain working of single phase bridge inverters with R load. [15]

8. Explain principle of operation of single phase voltage controller with R load and give its applications. [15]

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