

Code No: 155CU

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

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 $V_s = 220$ 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 V_a ,
 - b) The rms output voltage V_o [7+8]

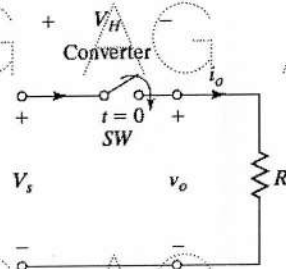


Figure 1

6. A converter is feeding an RL load as shown in Figure 2 with $V_s = 220$ 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 I_a , [7+8]

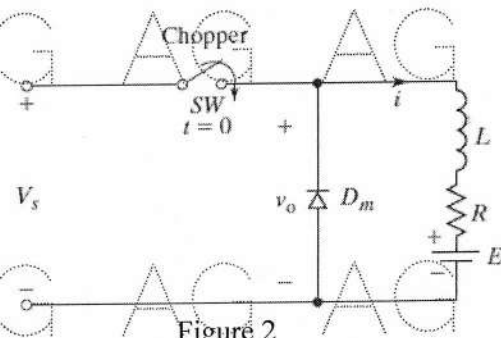


Figure 2

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

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

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