

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]

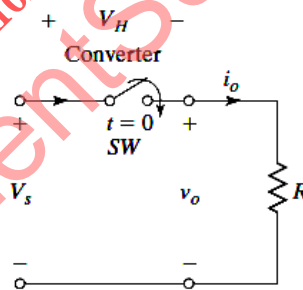


Figure 1

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]

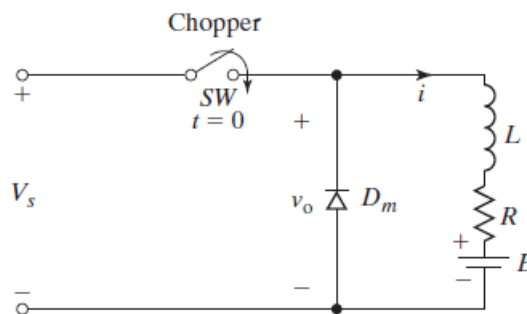


Figure 2

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]

---ooOoo---

downloaded from  
StudentSuvidha.com