

T.E (Electrical) Sem IV CBSEs

31/5/2019

(Time: 3 Hours)

[Total Marks: 80]

1/1

- N.B.:** (1) Question No. 1 is compulsory.  
(2) Answer any **three** from the remaining **five** questions.  
(3) **Assume** suitable data if necessary and justify the same.  
(4) **Figures to the right** indicate the marks.

1. (a) What is DC-DC converter? List few applications of it. [5]  
(b) Briefly explain Latching current and Holding current. [5]  
(c) Two transmitter analogy of SCR. [5]  
(d) Once SCR is triggered gate loses its control. Why? [5]
2. (a) Define and explain any two communication circuits of SCR. [10]  
(b) Explain the operation of a single phase full wave rectifier with RL load for continuous and discontinuous load. [10]
3. (a) Draw a neat circuit and explain the working of full wave fully controlled 3phase bridge circuit with resistive load. Draw the corresponding input and output voltage waveforms. [10]  
(b) Explain with circuit diagram and waveform of 1- phase dual converter. [10]
4. (a) Draw and Explain 3 phase inverter where 3 switches conduct together also do the calculation of output voltage. [10]  
(b) Define and explain a 1-phase Inverter with RL Load along with output voltage and output current wave forms and also obtained the expression. [10]
5. (a) Explain the step down chopper with and without CCM Mode. [10]  
(b) A BOOST Converter has input voltage 6V. The average output voltage  $E_0=18$  V and the average load current  $I_0=0.4$ A. The switching frequency is 20 kHz of  $L=250$   $\mu$ H and  $C=420$   $\mu$ F. Determine: (a) the duty cycle  $\alpha$ , (b) the ripple current of inductor,  $\Delta I$ , (c) the peak current of inductor,  $I_2$ , and (d) the ripple voltage of filter capacitor,  $\Delta V_c$ . [10]
6. (a) Explain in detail with circuit diagram and waveforms, single phase step down cycloconverter. [10]  
(b) Explain the principle of ON OFF control of AC voltage controller. [10]

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