Roll No ....

EE-7004(1)-CBGS

B.E. VII Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Advance Power Electronics

Time : Three Hours

Maximum Marks : 70

Note: i)   Attempt any five questions out of eight.

     ii)   All questions carry equal marks.

1. a) Give a brief introduction to various power electronic supplies and their performance.   7

   b) Explain the operation of switched mode power supply employing push-pull converter technique.   7

2. a) Compare Buck-boost and Cuk converter with their circuit diagram and brief introduction.   7

   b) With neat circuit diagram, explain resonant dc power supply.   7

3. a) Discuss the working of an isolated flyback regulator and derive the expression for RMS value of primary current.   7

   b) What do you mean by state space model? Explain.   7

4. Explain the principle of operation of three phase full bridge inverter operating in 120° mode with waveforms and circuit diagram.   14

5. a) Explain three phase current source PWM CSI with diagram and waveforms. 7

 b) Discuss space vector modulation for 3 phase bridge inverter. 7

6. a) What do you mean by AC choppers? List the advantages of AC chopper over AC voltage controllers. 7

 b) What are the methods used for controlling harmonics in AC choppers? Explain any one method of controlling the harmonics. 7

7. a) Explain the zero voltage transition ZVT DC-DC converter with waveform. 7

 b) Describe the zero current switching ZCS topology with circuit diagram and waveform. 7

8. a) A boost regulator has an input voltage of 12V. The average output voltage is 15V with an average load current of 0.5A. The chopping frequency is 20kHz. If L = 200mH and C = 400PF, calculate the duty ratio and ripple current of the inductor. 7

 b) Explain the losses associated with power switching devices and how they can be overcome by soft switching. 7

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