

Total No. of Questions : 8]

SEAT No. :

PB3803

[6262]-63

[Total No. of Pages :2

T.E. (Electrical Engineering)
POWER ELECTRONICS
(2019 Pattern) (Semester-I) (303142)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right indicates full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable additional data, if necessary.
- 5) Use of non-programmable calculator is allowed.

- Q1)** a) Explain difference between 1 - phase half - controlled converter and fully controlled converter. [4]
- b) Explain single phase dual converter with R-Load. [6]
- c) Explain the operation of single phase fully controlled bridge converter with RL load. Draw waveforms of output voltage and current for $\alpha = 60^\circ$ with continuous conduction. [8]

OR

- Q2)** a) Compare Circulating & non circulating current mode of dual converter. [4]
- b) Describe working of single - phase semi converter with R load. Draw waveforms of load voltage, load current for $\alpha = 60^\circ$. [6]
- c) A single phase fully controlled converter is connected to R Load of 10Ω . The input voltage to the bridge is 230 V. Calculate. [8]
- i) Average and RMS load voltage
 - ii) Average and RMS load current
- Firing angle is 60 degrees.

- Q3)** a) Draw output voltage & current waveform of single - phase AC voltage regulator with RL load. [3]
- b) Explain working of three phase semi controlled converter with R Load and firing angle of 30 degrees. Draw output voltage waveforms. [6]
- c) Explain operation of two stage AC voltage regulator with an output waveform for RL load. [8]

OR

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Q4) a) What is two stage AC voltage regulator? Draw neat diagram with R load. [3]

b) Explain single phase AC voltage regulator feeding R load. Draw output voltage waveform for firing angle of 60° . [6]

c) Explain working of three phase fully controlled converter with RL Load and firing angle of 60 degrees. Draw output voltage waveforms. [8]

Q5) a) Explain working of single - phase full bridge voltage source Inverter connected to RL load with neat circuit diagram. Draw output voltage and current waveforms. [9]

b) Explain sinusoidal PWM technique for inverters. How voltage and freq. control is achieved? [8]

OR

Q6) a) State different voltage control techniques used in single phase inverter. Elaborate any two methods in detail. [9]

b) Explain with circuit diagram and waveforms operation of single phase current source inverter. [8]

Q7) a) Explain working of three phase voltage source inverter in 180° mode of operation. For star connected load draw output voltage waveforms. Show devices conducting in each step. [10]

b) What is necessity of using Multilevel Inverters? Draw circuit diagram of H bridge multilevel Inverter. [4]

c) What are different harmonic elimination techniques in inverter? Explain any one method. [4]

OR

Q8) a) Explain working of three phase voltage source inverter in 120° mode of operation. For star connected load draw output voltage waveforms. [10]

b) Compare multi-pulse and multilevel inverters. [4]

c) Draw a neat diagram and explain Flying capacitor multilevel converter. [4]

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