

12. (a) Discuss the principle of working of a three phase voltage source inverter. Draw a phase and line voltage waveform on the assumptions that each thyristor conducts for 180 degree.

Or

- (b) Derive the multi pulse voltage control of three phase inverter.
13. (a) A single phase ASCI feed a resistive load. Describe its working with the appropriate circuit and waveforms, Find also the circuit turns off time for the thyristor.

Or

- (b) With neat sketch of voltage and current waveform, explain the working principle of CSI.
14. (a) Draw and explain the operation of flying capacitor multilevel inverter.

Or

- (b) Draw and explain the operation of single phase Z-source inverter with relevant waveforms.
15. (a) Explain the single phase parallel inverter with a neat diagram and its waveform.

Or

- (b) Draw the block diagram for online and off line UPS and explain the operation of UPS.

PART C — (1 × 15 = 15 marks)

16. (a) A single phase full bridge inverter is fed from a dc source such that fundamental component of output voltage is 230V. Find the rms value of thyristor and Diode current for the following loads (i) $R = 4\Omega$, (ii) $R = 3\Omega$, $X_L = 10\Omega$, $X_C = 6\Omega$.

Or

- (b) A 3 phase inverter delivers power to a resistive load from a 450 V DC source. For a star connected load of 100 ohm/phase. Determine for both 180 degree and 120 degree mode of operation.
- (i) RMS value of load current
- (ii) RMS value of thyristor current
- (iii) Load power.