

- j) Explain the operation of single-phase to single-phase mid-point step- down cycloconverter.
- k) Explain the principle and operation of UPS with neat sketch diagram.
- l) (i) A single-phase bridge type cycloconverter feeds a load R. For an output frequency equals to one-third of the input frequency, sketch output voltage waveform for a firing angle about 30° .
(ii) Derive an expression for the rms output voltage in part (i).

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3 Discuss the principle and operation of all four quadrant converter. (16)
- Q4 Describe with neat sketch diagram and wave form of 180° and 120° conduction mode of three-phase inverter. (16)
- Q5 Discuss the operation of Buck-Boost regulator and Cuk regulator. (16)
- Q6 Describe the operational principle of Fly Back Converter and Forward converter. (16)