



**Module-4**

- 7 a. Explain with neat circuit diagram and waveforms the principle of step down chopper with R load. (10 Marks)  
b. With the help of neat circuit diagram, explain the principle of step up chopper. (10 Marks)

**OR**

- 8 a. With the help of neat circuit diagram, explain four quadrant class E chopper. (10 Marks)  
b. With the help of neat circuit diagram, explain the operation of class A chopper. (10 Marks)

**Module-5**

- 9 a. What is an inverter? Write a note on performance parameters of inverters. (10 Marks)  
b. With the help of circuit diagram and waveforms explain the principle of operation of inverters. (10 Marks)

**OR**

- 10 a. Explain with neat circuit diagram and waveforms single phase bridge inverter. (10 Marks)  
b. Explain the following two types of voltage control in single phase inverters:  
(i) Single pulse width modulation  
(ii) Multiple pulse width modulation. (10 Marks)

\*\*\*\*\*