17541

15162

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Illustrate your answers with ***neat*** *sketches* ***wherever*** *necessary.*
(3) Figures to the ***right*** *indicate* ***full*** *marks.*
(4) Assume suitable data, if ***necessary****.*
(5) Mobile Phone, Pager and any other Electronic Communication devices are ***not*** *permissible in Examination Hall.*

Marks

1. A) Attempt **any three**: **12**

a) State the need of protection circuits for power devices. List different types of protection circuits.

b) What are the types of choppers ? Draw the basic circuit of step down chopper and describe its operation in brief.

c) State the types of inverters. Draw the circuit of current source inverter and describe its operation in brief.

d) Describe the working of relay type AC voltage stabilizer with suitable diagram.

B) Attempt **any one**: **6**

a) Describe with circuit diagram how chopper can be operated in four quadrants.

b) Describe the working of series inverter with neat circuit diagram and waveforms.

2. Attempt **any two**: **16**

a) Draw di/dt protection circuit and describe its operation.

b) Describe the operation of single phase cycloconverter with suitable diagram and waveforms.

c) Draw block diagram of sequential timer for resistance welding. Describe the function of each block.

3. Attempt **any four**: **16**

a) Describe how SCR can be protected from overvoltage with neat circuit diagram.

b) Draw the circuit of servo type AC voltage stabilizer and describe its operation.

c) With the help of suitable diagram, explain the working of ON line UPS.

d) Draw neat diagram of line contractor using SCR and describe its working.

e) Explain the working of single quadrant class A chopper using SCRs with suitable diagram.

P.T.O.

Marks

4. A) Attempt **any three**: **12**

a) Describe the operation of Jones chopper with suitable diagram.

b) Describe the operation of non-isolated SMPS with diagram.

c) Draw symbols and V-I characteristics of SIT and MCT.

d) Compare series inverter and parallel inverter on the basis of any four points.

B) Attempt **any one**: **6**

a) State the need of series and parallel connections of SCR. Draw circuit diagram of three SCRs in series and parallel connections.

b) Describe how O/P voltage of inverter can be controlled using PWM techniques.

5. Attempt **any two**: **16**

a) Describe how voltage is stabilized using phase control method with suitable diagram. List two advantages of it.

b) Describe operating principle of resistance welding with neat diagram. Explain types of resistance welding.

c) Describe the operation of isolated SMPS with circuit diagram. List any two advantages and disadvantages.

6. Attempt **any four**: **16**

a) Draw the constructional diagram of FCT. Draw V-I characteristics of it.

b) Distinguish between relay type and servo type AC voltage stabilizer with reference to operating principle, efficiency, distortion and application.

c) Draw block diagram of OFF line UPS and describe its working.

d) State need of UPS. Draw the diagram of line interactive UPS and describe its working.

e) Draw the circuit of synchronous weld control and describe its operation.
