34041 – Industrial Electronics

1. Power Devices And Trigger Circuits

Part – A

1. Draw the symbol of (i) GTO (ii) MOSFET.
2. Mention the isolation devices.
3. Draw the symbol of IGBT and MOSFET.
4. Mention the types of triggering of SCR.
5. What is GTO? Draw the symbol.

Part – B

1. Compare power MOSFET and power IGBT.
2. Explain AC gate triggering.
3. Write short notes on pulse transformer.
4. What is opto-coupler? State its functions.
5. Compare power MOSFET with power transistor.

Part – C

1. Explain the working principle and VI characteristics of MOSFET with neat diagram. State its applications.
2. Explain the working principle of synchronized UJT triggering circuit with neat diagram and waveform.
3. Explain the working principle and VI characteristics of IGBT with neat diagram.
4. Explain the working principle of resistance capacitance firing circuit with neat diagram and waveforms.

2. Converters And Choppers

Part – A

1. Define converter and state its uses.
2. What is meant by chopper?
3. What is meant by forced commutation?
4. What is meant by natural commutation?
5. State the applications of chopper.

Part – B

1. List the types of forced commutation.
2. State the importance of flywheel diode.
3. Draw the circuit diagram of single phase fully controlled bridge converter with RL load.
4. What is the purpose of using fly wheel diode in converter circuit?
5. What is forced commutation? List the types.

Part – C

1. Explain the working principle of single phase fully controlled bridge converter with R and RL loads with neat diagrams.
2. Explain the operation of Jones chopper with neat diagrams.
3. Explain the working of DC chopper with diagrams.
4. Explain the working principle of single phase half controlled bridge converter with R and RL load with diagrams.
5. Draw and explain the working principle of AC chopper with diagrams.

3. Inverters And Applications

Part – A

1. Define inverters and mention its uses.
2. Define battery bank and mention its types.
3. What is SMPS? Mention its types.
4. List the methods of obtaining sine wave output from the inverter.
5. State the different methods to control the O/P voltage of inverter.

Part – B

1. List any three applications of SMPS.

2. List the advantages and disadvantages of SMPS.
3. Compare online UPS with offline UPS.

Part – C

1. With neat diagram explain the operation of bridge inverter with RL load.
2. Explain the two types of UPS with block diagram.
3. Explain the working principle of single phase inverter with waveforms and circuit diagram.
4. Draw the block diagram of SMPS and explain it. State its applications.
5. Explain the working principle of McMurray inverter with neat diagrams and state its advantages.
6. Draw the block diagram of SMPS and explain its functions. State its advantages.

4. Programmable Logic Controller

Part – A

1. Mention the various types of arithmetic operations performed in PLC.
2. State any four advantages of PLC.

Part – B

1. State the advantages of PLC.
2. What are the programming languages used in PLC?
3. Draw the symbol for the following items in ladder diagram:
   (i) Normally opened contact (ii) Normally closed contact (iii) Output loads.
4. What is the function of I/P module used in PLC? List the I/P devices.
5. Draw the ladder diagram for the following gates: (i) OR gate (ii) AND gate (iii) Ex-OR gate

Part – C

1. Explain the various input and output modules used in PLC.
2. Draw and explain the ladder logic diagram of star delta starter.
3. Draw the block diagram of PLC and explain each block.
4. Draw the ladder diagram of conveyor control and explain.

5. Distributed Control Systems

Part – A

1. Specify the basic components of LCU.
2. What is DCS?

Part – B

1. State the features of DCS.
2. What is the function of LCU in distributed control system?
3. What is LCU? State its functions.

Part – C

1. Write notes on: (i) Plant display (ii) Area display.
2. Draw the architecture of hybrid system and explain it.
3. Draw and explain the architecture of distributed control system.
4. Explain the features and advantages of DCS.