Scheme – G

Sample Question Paper

Course Name : Diploma in Industrial Electronics

Course Code : IE/IU

Semester : Fifth for IE and Six for IU **17541**

Title Subject : Industrial Electronics and Application

Marks : 100 **Time: 03 Hours**

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. Preferably, write the answers in sequential order

Q1. A) Attempt any THREE **(12 Marks)**

a. Draw symbols of SIT, MCT and FCT. List any one application of each.

b. List the types of choppers on the basis of operation quadrants. What is the effect of duty cycle on output voltage?

c. Draw the circuit diagram of Half Bridge Inverter with RL Load. Draw Load current and voltage waveforms.

d. Distinguish between Relay type and Servo type stabilizers with respect to operating principle, efficiency distortion and applications.

Q1. B) Attempt any ONE **(06 Marks)**

a. Describe the working of class-B chopper using SCR with circuit diagram. How output voltage can be controlled?

b. Draw the circuit diagram of full bridge Inverter. Describe the operation of full bridge Inverter with output voltage waveforms.

Q2. Attempt any TWO **(16 Marks)**

a. State the need of series and parallel connections of SCR, Draw neat labeled circuit diagram of three SCRs connection in series combinations. Describe the roll of static and dynamic equalizing network.

b. Describe the operation of series inverter with circuit diagram. Draw labeled waveforms of load current, output voltage. State any two applications.

c. Draw Block diagram of sequential timer for resistance welding. Describe the function of each block. List different signals generated.

Q3. Attempt any FOUR **(16 Marks)**

a. Describe how SCR can be protected from over voltage with suitable labeled circuit diagram?
b. Draw the circuit diagram and explain the working of isolated SMPS.
c. Which type of UPS is used for Personal computer? Draw the related block diagram and explain the operation of each block.
d. Draw the circuit diagram of synchronous weld control and describe the working of the circuit.
e. Draw the circuit diagram of Jones chopper and describe operation.

Q4. A] Attempt any THREE **(12 Marks)**

a. Describe the operation of Morgan's chopper with circuit diagram.
b. How AC voltage is stabilized by servo type stabilizer? Describe with block diagram.
c. What is Need of Protection Circuits for power devices? List different types of protection circuits.
d. Draw the circuit diagram of parallel inverter and describe the operation.

Q4. B] Attempt any ONE **(6 Marks)**

a. Draw the circuit diagram of parallel connections of two thyristors and describe with forward characteristics. Justify symmetrical arrangement of SCRs.
b. Describe how Output voltage & Harmonics can be Controlled using PWM control method of inverter.

Q5. Attempt any TWO **(16 Marks)**

a. Draw the circuit diagram of phase control method used in AC voltage stabilizer. Describe the operation. List any two advantages, disadvantages and any two applications.
b. State the principle of resistance welding. Draw the block diagram of Capacitor energy storage welding with waveforms and state two advantages and disadvantages.
c. Draw diagram of non-isolated SMPS. Describe operation of non-isolated SMPS. List any two advantages and disadvantages.

Q6. Attempt any FOUR **(16 Marks)**

a. Draw the constructional diagram of MCT. Explain the operating principle of MCT.
b. Distinguish between servo type and relay type AC voltage stabilizer with reference to output voltage, range of input voltage, efficiency and applications
c. Draw block diagram of Line Interactive UPS. Describe the function of each block.
d. Draw neat labeled diagram of line contactor using SCR and describe the working.
e. Define Battery parameters-back up time, power rating with its typical value.

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Sample Test Paper-I

Course Name : Diploma in Industrial Electronics

Course Code : IE/IU

Semester : Fifth for IE and Six for IU **17541**

Title Subject : Industrial Electronics and Application

Marks : 25 **Time: 01 Hour**

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. Preferably, write the answers in sequential order

Q1. Attempt any THREE of the following. **(9 Marks)**

a. List three modern power devices. Draw symbols of each.

b. Describe the working of SIT with constructional diagram.

c. Draw and describe the basic circuit of step-down chopper.

d. Draw and describe Half Bridge inverter with Resistive Load.

e. Draw circuit diagram and waveform of single phase Cycloconverter.

Q2. Attempt any TWO of the following. **(8 Marks)**

a. Describe series connections of SCR.

b. Draw and describe the working of class A chopper using SCR.

c. Distinguish between full bridge and push-pull inverter with respect to number of transistors, output transformer required, efficiency and current rating.

Q3. Attempt any two of the following. **(8 Marks)**

a. Describe Series inverter with output waveforms.

b. Describe operation of Push pull Inverter with R- load, with circuit diagram and waveforms.

c. How Harmonics can be controlled in PWM method of Inverter?

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Sample Test Paper-II

Course Name : Diploma in Industrial Electronics

Course Code : IE/IU

Semester : Fifth for IE and Six for IU **17541**

Title Subject : Industrial Electronics and Application

Marks : 25 **Time: 01 Hour**

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. Preferably, write the answers in sequential order

Q.1 Attempt any three **(9 Marks)**

a. State the Need of Stabilizers? List types.

b. List any three advantages and applications of AC Voltage stabilizers.

c. Draw the Basic block diagram of UPS. State the function of each block.

d. State the working principle of Resistance Welding with diagram.

Q.2 Attempt any two **(8 Marks)**

a. List the Types of Resistance Welding and explain the Seam welding with diagram.

b. Draw and describe working of tap-changing type AC voltage stabilizer.

c. Draw and describe working of On-line – UPS.

Q.3 Attempt any two **(8 Marks)**

a. List any eight Specifications of UPS with typical values.

b. Draw and describe the working of Isolated SMPS with waveforms.

c. Describe the working of Line contactor using SCR with diagram.