1253

October 2024

Time – Three hours
(Maximum Marks: 100)

[**N.B.** 1. Answer all questions under Part-A. Each question carries 3 marks.

2. Answer all the questions either (A) or (B) in Part-B. Each question carries 14 marks.]

PART – A

1. Mention any three applications of IGBT.

2. What are triggering circuits?

3. What is natural commutation?

4. Draw the circuit diagram of Jones chopper.

5. List the types of output voltage control in inverters.

6. Differentiate on-line and off-line UPS.

7. List any three arithmetic functions used in PLC programming.

8. What is ladder diagram?

9. List the basic building blocks of a robot.

10. Write a note on obstacle avoidance.

[Turn over.....

PART – B

11. (a) Explain the working principle and V-I characteristics of GTO with neat diagram.

    (Or)

    (b) Explain about the synchronized UJT triggering circuit with its waveform.

12. (a) Discuss about the single phase half controlled bridge converter with RL load.

    (Or)

    (b) Explain the operation of the chopper using MOSFET.

13. (a) Explain the operation of single phase full bridge inverter with R load.

    (Or)

    (b) Draw the block diagram of SMPS and explain the function of each block.

14. (a) Draw and explain the block diagram of PLC.

    (Or)

    (b) Explain the various types of logic functions in PLC with their ladder logic diagram.

15. (a) Describe the various types of electric motors.

    (Or)

    (b) Explain the following (i) optical sensor (ii) inertial sensor (iii) thermal sensor (iv) chemical sensor (v) bio sensor.

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