7648

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

DEEE – FIFTH SEMESTER EXAMINATION

POWER ELECTRONICS, PLC AND SCADA

Time : 3 Hours]   [*Total Marks* : 80

PART—A   3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State any three applications of DIAC.

2. State the need of commutation of SCR.

3. Classify the converters in any three aspects.

4. Define chopper. Write any two applications of chopper.

5. Classify the inverters based on the type of connection and type of output voltage.

6. Define cycloconverter and mention any four applications of it.

7. State any three factors which affects the speed of DC motor.

8. Draw the circuit diagram of anti-theft alarm circuit using SCR.

9. State any three applications of PLC.

10. State the need of data acquisition.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the different triggering modes of TRIAC with neat diagrams. 8

(OR)

(b) Explain the V-I characteristics of SCR with the help of a diagram. 8

12. *(a)* Explain the working of single-phase full wave fully controlled converter under resistive load with neat waveforms. 8

(OR)

(b) Draw and explain the working of single-phase full wave AC voltage controller under resistance load with neat waveforms. 8

13. *(a)* Explain the working of series inverter. 8

(OR)

(b) Classify cycloconverters and explain the basic principle of operation of cycloconverter with neat sketch. 8

14. *(a)* Explain the method of speed control of DC motor using chopper. 8

(OR)

(b) Explain the operation of light dimmer circuit using DIAC and TRIAC. 8

15. *(a)* Explain CTU (Count up) and CTD (Count down) instructions. 4+4=8

(OR)

(b) Draw and explain the ladder diagram for staircase wiring. 8

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. State any five communication methods used is SCADA system and state any three applications of SCADA.

★★★