

1387**Code : 15EC61T***Register
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VI Semester Diploma Examination, Oct./Nov.-2019**INDUSTRIAL AUTOMATION****Time : 3 Hours]****[Max. Marks : 100**

- Note :** (i) Answer any six questions from PART – A.
(ii) Answer any seven questions from PART – B.

PART – A

1. List the applications of SCR and define holding current. 5
2. Compare natural and forced commutation. 5
3. Explain the working principle of step up chopper. 5
4. Define cycloconverter. Explain its working principle. 5
5. Explain light dimmer circuit using DIAC & TRIAC. 5
6. Sketch the block diagram of speed control of DC motors using dual converters. 5
7. Explain scanning process of PLC. 5
8. Mention the features of SCADA. 5
9. Explain the working of HMI with sketch. 5

PART - B

10. Explain the working of single phase half wave controlled rectifier. 10
11. Explain the V-I characteristics of TRIAC and explain its working. 10
12. Explain R-triggering method to turn on SCR with a neat circuit diagram. 10
13. Explain the different methods of protecting the SCR. 10
14. Sketch and explain the working principle of variable DC link inverter. 10
15. Explain four quadrant chopper with circuit diagram. 10
16. Sketch and explain the armature field control method for the speed control of DC shunt motor. 10
17. Write the ladder diagram and truth table for the following expression : 10
- (i) $Y1 = (A \text{ and } B) \text{ or } C$
- (ii) $Y2 = (A \text{ or } B) \text{ and } C$
18. (a) Explain up/down counter with example. 5
- (b) Differentiate between relay logic control panel and PLC based control panel. 5
19. Explain the block diagram of DCS system. 10
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