BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

Question Bank (I-Scheme)

Name of subject: Elements of Industrial Automation **Unit Test :II**

Subject code: 22526 **Course : EE5I**
Semester: V

UNIT - III

PLC Programming basics (CO3)

(2 Marks)

1. Give list of any four relay type instructions with their symbols.
2. List any four logical and arithmetic instructions in PLC.
3. List any four data handling and comparison instructions in PLC.
4. Draw a PLC wiring diagram for control of a lamp from 2 switches.
5. Draw the off delay timer instruction with waveforms.
6. Draw the symbols of following relay type instructions. i) IF-OPEN ii) IF –CLOSE
7. Draw the ladder program for verifying the XOR logic.
8. Draw and explain ladder diagram for AND operation.
9. List types of timers.

(4 Marks)

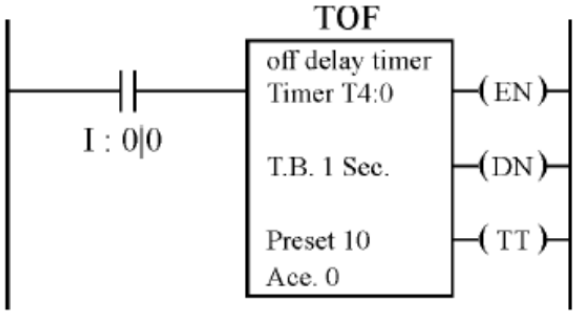
10. With reference to Ladder logic, draw the symbols of following instructions:
    (i) NO (ii) OSR (iii) Output coil (iv) NC.
11. List arithmetic instructions of PLC. Explain any one instruction with example.
12. Draw ladder diagram for given truth tables

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

13. Explain the instruction TON and TOFF.

14.Draw the timing diagram for following timer instruction bit.
i) I:0/0 ii) EN iii) DN iv) TT



15. Explain CTD instruction with waveforms.

16. Explain CTU instruction with waveforms.

17. Explain the status word register of Counters.

UNIT - IV

PLC Wiring Diagrams and Ladder Logic (CO4)

(2 Marks)

18. State the function of seal in circuit w.r.t. PLC.

19. State the function of soft starter.

20. State the I/O list for bottle filling application.

(4 Marks)

21. Develop the control circuit for star-delta starter used for starting a 3 phase induction motor.

22. Develop the ladder diagram for stepper motor control.

23. Write the ladder program for 24 hour clock.

24. Develop the ladder diagram for forward-reverse control of a 3 phase induction motor.
25. Develop ladder and wiring diagram of DOL starter with OLR.

26. Explain the working of PLC based bottle filling system with the help of ladder Diagram.

27. Develop a ladder diagram for ON/OFF temperature control.

28. Draw a ladder diagram for 3 motor operation for following condition:
    i) Start push button starts motor M_1. After 15 seconds M_2 and M_3 starts
    ii) Stop push button stops M_3 and after 15 seconds motor M_2 and M_1

29. Explain with block diagram the working of soft starter.

30. Explain the working of PLC based Traffic light control with the help of ladder diagram.

31. Develop a ladder program explaining the use of Latching Relay.

32. Explain the ladder program of water level controller

UNIT - V

SCADA & DCS (CO5)

(2 Marks)

33. Give the full form of SCADA & HMI.

34. State any two uses of HMI.

35. State the function of RTU and MTU w.r.t. SCADA.

36. State any four features of DCS.

(4 Marks)

37.Develop a generalised DCS architecture for control of a plant.

38.Explain block diagram of SCADA. Identify different components of it.