Reg. No. :

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

## Question Paper Code: 31662

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Sixth Semester

Instrumentation and Control Engineering

01UIC602 - LOGIC AND DISTRIBUTED CONTROL SYSTEMS

(Common to Electronics and Instrumentation Engineering)

(Regulation 2013)

Duration: Three hours                                          Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List out any four PLC input and output devices.

2. Compare $T_{ON}$ and $T_{OFF}$ timers.

3. List the sequence of operations carried out in PLC programming.

4. Mention any four real time applications of PLC.

5. Draw the general block representation of a computer control system.

6. Classify the types of stability analysis for sampled data control systems.

7. What is the need can be satisfied in designing an industrial grade LCU?

8. Mention the applications of DCS in rolling mills.

9. Mention the advantages of field bus communication.

10. Differentiate between interchangeability and interoperability.

11. (a) (i)  Draw the architecture of PLC and explain individual components. (8)

       (ii) Point out the advantages and disadvantages of PLC over relay logic. (8)

Or

  (b) Describe the architecture of PLC with neat diagram in detail. (16)

12. (a) (i)  Describe the sequencer instructions of PLC with examples. (8)

       (ii) Distinguish between PLC Vs Computer. (8)

Or

  (b) Develop the logic ladder diagram for bottle filling system. (16)

13. (a) With neat diagrams, explain the open loop and closed loop sampled data control system in detail. (16)

Or

  (b) Mention the necessary conditions and sufficient conditions for Jurry's stability test; check the satiability conditions with an example. (16)

14. (a) Describe the architecture of Distributed Control System and its main sub-system. (16)

Or

  (b) Explain the low level and high level operator interfaces of DCS in detail. (16)

15. (a) Illustrate in detail about the theory of operation of HART communication protocol. (16)

Or

  (b) (i)  Explain the Master-Slave mode of HART. (4)

       (ii) Describe the basic requirements of field bus standards. (12)

———————————

**31662**