Reg. No. : | | | | | | | | | | |

Question Paper Code: 36602

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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. How do you choose the PLC for a particular application?
2. Compare T_{ON} and T_{OFF} timers.
3. Write a simple program using PLC to implement the EXOR logic gate.
4. Mention any four real time applications of PLC.
5. Differentiate between analog controller and digital controller.
6. Classify the types of stability analysis for sampled data control systems.
7. Compare individual, centralized and distributed control systems.
8. Mention the applications of DCS in rolling mills.
9. Mention the advantages of field bus communication.
10. Differentiate between interchangeability and interoperability.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Discuss the power supply used in PLC with neat block diagram. (8)

(ii) Summarize the functions of analog I/O module of Programmable Logic Controllers. (8)

Or

(b) Summarize the functions of analog I/O module of Programmable Logic Controllers. (16)

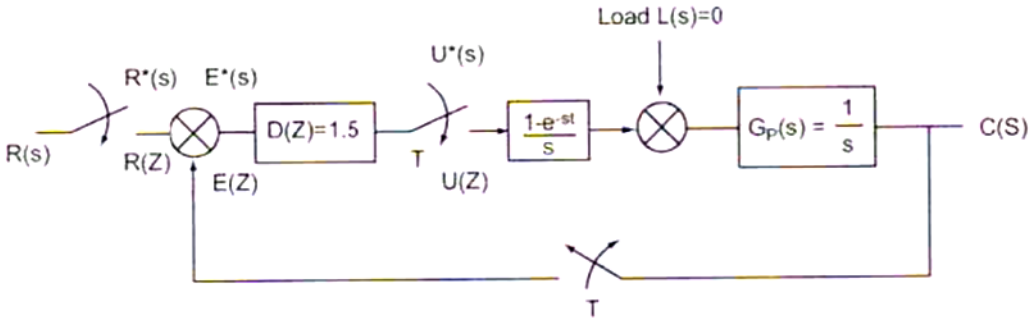
12. (a) Describe the sequencer instructions of PLC with examples. (16)

Or

(b) Describe the program control instructions of PLC with examples. (16)

13. (a) (i) Conclude the open loop response of the sampled data system shown in below to a unit step change in input *X(t).* (8)

(ii) Conclude the pulse transfer function *C(z) / R(z)* for the sampled data system of Figure with *L(s)* = 0, and also find the transient response to a step change in set point. (8)



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) With neat diagram explain the architecture of DCS in detail. List the advantages in control system applications. (16)

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

Or

(b) Describe the basic requirements of field bus standards. (16)