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**Question Paper Code: 36602**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

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<sub>ON</sub> and T<sub>OFF</sub> timers.
3. Write a simple program using PLC to implement the EXOR logic gate.
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. Compare individual, centralized and distributed control systems.
8. Mention the applications of DCS in rolling mills.
9. Differentiate between interchangeability and interoperability.
10. Define Interoperability.

PART - B (5 x 16 = 80 Marks)

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

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)

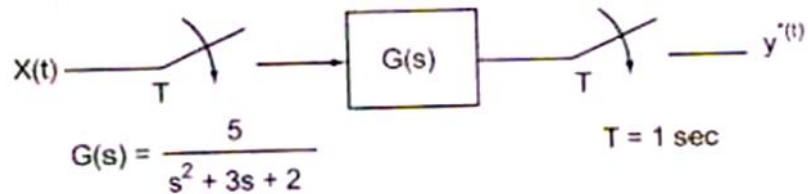
Or

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

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

Or

(b) Conclude the open loop response of the sampled data system shown in below to a unit step change in input  $X(t)$ . (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)