A   Reg. No. :

Question Paper Code: 57503

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

Seventh Semester

Electronics and Instrumentation Engineering

15UEI703 - INDUSTRIAL AUTOMATION

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Most industrial control applications: CO1-R

   (a) can be solved using one method of control

   (b) can be done more reliable using solid-sate models

   (c) must have the process specified correctly to be successful

   (d) All of the above

2. _____ is primarily concerned with logical   CO1-R
   control focussed on individual machines and the logical linkage between
   machines and devices.

   (a) Micro Automation   (b) Porgrammable Automation

   (c) Flexible Automation   (d) Fixed Automation

3. _____ provides flow controls and directional   CO2-R
   control functions in a single valve.

   (a) Transmitter   (b) Internet Protocol   (c) I/P Converter   (d) RS 32 Protocol

4. Many Distributed control system uses ethernet as a communication   CO2-R
   network because

   (a) speed is not affected by traffics   (b) It is wireless network standard

   (c) fully deterministic   (d) it is robust and inexpensive

5. _____ is used for interfacing and computing functions and also provides the means of communication between the other devices.   CO3-R

   (a) Local control unit   (b) Distributed control system

   (c) Process control system   (d) operator interface

6. If one site fails in distributed system .   CO3-R

   (a) the remaining sites can continue operating

   (b) all the sites will stop working

   (c) directly connected sites will stop working

   (d) none of the mentioned

7. LLOI interface is used for _____.   CO4-R

   (a) Control Stations   (b) Control room

   (c) Control mode interlink   (d) Tuning mode

8. In distributed systems, link and site failure is detected by _____.   CO4-R

   (a) polling   (b) handshaking

   (c) token passing   (d) none of the mentioned

9. _____ is a computer based control system installed in that controls and monitors the mechanical and electrical equipment.   CO5-R

   (a) Energy management   (b) Building Automation System

   (c) Intergated System   (d) Process Control System

10. The method of solid modeling that defines the topology of faces, edges, and vertices, as well as data that defines the surface in which each face lie is called .   CO5-R

    (a) Constructive solid geometry   (b) layering

    (c) boundary representation   (d) isometric

PART – B (5 x 2= 10 Marks)

11. What are the types of automation?   CO1-U

12. What are the two modes of communication of HART?   CO5-R

13. Mention any four advantages of DCS.   CO3-R

14. Compare LLOI and HLOI.   CO4-U

15. What are the objectives of energy management?   CO5-R

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PART – C (5 x 16= 80Marks)

16. (a) Elaborate in detail the hierarchical level of automation CO1-App (16)

Or

(b) (i) Explain role of controller in automation and also mention the CO1-App (12)
advantage and disadvange of automation.

(ii) List out the types of Automation in a plant. CO1-U (4)

17. (a) (i) Explain the features of HART network and how the control CO2-U (10)
system is interfaced to it.

(ii) Discuss the implementation of HART field controller. CO2-U (6)

Or

(b) By the knowledge of control valve, evaluate the list of problems CO2-U (16)
that can occur in control valve and suggest trouble shooting
methods

18. (a) Draw and explain basic DCS system architecture. CO3-App (16)

Or

(b) Explain any one popular communication protocol used in field CO3-U (16)
level.

19. (a) Compare Low level and high level interfaces in DCS CO4-U (16)

Or

(b) Describe in detail about the low level and high level engineering CO4-U (16)
interfaces.

20. (a) Explain about the structure of building automation and control CO5-U (16)
networks with neat diagram.

Or

(b) Describe with neat diagram the operation of building automation CO5-U (16)
system.

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