**A** **Reg. No. :** | | | | | | | | | | |

# Question Paper Code: 57503

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

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. _____ is the human involvement is totally eliminated and the process is entirely carried out and controlled through automatic means along with a proper feedback system. CO1-R

   (a) Partial Automation (b) Full Automation

   (c) Mechanisation Automation (d) Semi Automation

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

   (a) Micro Automation (b) Porgrammable Automation

   (c) Flexible Automation (d) Fixed Automation

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

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

4. _____ are one of an array of components responsible for controlling the pressure and amount of air as it moves through a system CO2-R

   (a) Pneumatic Valves (b) Hydrallic Valves

   (c) Actuator (d) Accumulator

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. _____ is the small collection of hardware in the system that can do closed loop control. CO3-R

(a) DCS (b) PID Controller (c) LCU (d) LLOI

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

(a) Control Stations (b) Control room

(c) Control mode interlink (d) Tuning mode

8. _____ are the requirements of engineering interface. CO4-R

(a) System configurations (b) Integration of system functions

(c) Indicator stations (d) Trend recorders

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. _____ is the process of monitoring, controlling and conserving energy in a building. CO5-R

(a) Energy Management (b) Climate Protection

(c) Energy Conservation (d) Energy Procurement

PART – B (5 x 2= 10 Marks)

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

12. What is HART? CO5-R

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

14. What is a Low Level Engineering Interface? CO4-U

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

PART – C (5 x 16= 80Marks)

16. (a) (i) Discuss briefly about the hierarchical levels in industrial automation systems. CO1-App (12)

(ii) How can "Flexibility" be achieved? CO1-App (4)

Or

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

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

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

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

Or

(b) (i) Explain the field bus transmitter's architecture. CO2-U (10)

(ii) Discuss in detail about the benefits of field bus transmitter's. CO2-U (6)

18. (a) Explain the architecture of distributed control system with neat diagram. CO3-App (16)

Or

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

19. (a) Explain the process interfacing issues in LCU. CO4-U (16)

Or

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

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| 20. | (a) | Explain about the structure of building automation and control networks with neat diagram. | CO5-U | (16) |
| | | Or | | |
| | (b) | Elaborate the functions of energy management systems. | CO5-U | (16) |