[42]

SARDAR PATEL UNIVERSITY

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B. Sc. - 6th Semester (Instrumentation - Vocational)

US06CINV22 (Control System Components and Techniques - II)

Day and Date: Friday, 16/07/2021

Time: 10:00 am to 12:00 Noon

Maximum Marks: 70

Que 1   **Multiple Choice Type Questions.**   **[10]**

1   The _____ is the work centre for the operators.
  - **a)** Video display
  - **c)** Console
  - **b)** Keyboard
  - **d)** Group display

2   The _____ shows the bar essentials of several groups, each group in a separate rectangle.
  - **a)** Group display
  - **c)** Graphical display
  - **b)** Detail display
  - **d)** Overview display

3   _____ stations can be divided into various categories based on the hardware architecture and on the functions they perform.
  - **a)** Work station
  - **c)** UPS
  - **b)** Annunciator
  - **d)** LAN

4   _____ does not have a hard disk.
  - **a)** Workstation
  - **c)** PLC
  - **b)** Diskless workstation
  - **d)** DCS

5   _____ is the brain of the control system.
  - **a)** Controller
  - **c)** Transmitter
  - **b)** Sensor
  - **d)** Setpoint

6   _____ : A variable that must be controlled at some desired value.
  - **a)** Setpoint
  - **c)** Manipulated variable
  - **b)** Controlled variable
  - **d)** Disturbance

7   _____ : A variable used to maintain the controlled variable at its set point.
  - **a)** Controlled variable
  - **c)** Manipulated variable
  - **b)** Final control element
  - **d)** Range

8   _____ provides an interface between the PLC and the user during program development, start-up, and troubleshooting.
  - **a)** Temperature sensor
  - **c)** Memory unit
  - **b)** Pressure sensor
  - **d)** Programmer unit

9   In PLC, _____ is the library where the application program is stored.
  - **a)** Memory unit
  - **c)** Input module
  - **b)** Programmer unit
  - **d)** Output module

10   The central processing unit (CPU) also called the _____.
  - **a)** Central unit (CU)
  - **c)** Controlling device
  - **b)** Central control unit (CCU)
  - **d)** Input unit

Que 2 Fill in the blanks and True-False. [08]

1. The _____ is given by the low and high values of the process variable that is measured.
2. The _____ provides the isolation necessary to protect solid-state components from most high-voltage line spikes.
3. The _____ is specific to a single loop or control function.
4. The _____ are used solely to operate, monitor, and control plant parameters.
5. The transfer function of a control system is the relationship between the input signal and the output signal [TRUE/FALSE].
6. PLC stands for programmable logic controller [TRUE/FALSE].
7. Graphic display capability allows a picture to be drawn on the screen so that the operator can look at a portion of the process more realistically than by watching a row of bar graphs [TRUE/FALSE].
8. LAN stands for local area network [TRUE/FALSE].

Que 3 Short Answer Questions (Attempt any 10 out of 12) [20]

1. Define Range and Span.
2. Write briefly on the transfer function control system.
3. What do you mean by controlled variable? Explain it with an example.
4. Write on evaluation of PLC.
5. Explain the programmer unit of PLC.
6. Enlist advantages of using PLCs.
7. Write on group display.
8. Explain the man-machine interface.
9. Enlist features of DCS.
10. What is operator workstation?
11. Write on gateway.
12. What do you mean by intelligent workstation?

Que 4 Long Answer Questions (Attempt any 4 out of 8) [32]

1. Write a detailed note on the feedback control system.
2. Give an account of a cascade control system.
3. Write a note on the ladder diagram.
4. Give an account of PLC architecture.
5. Write on DCS integration with PLCs and computers.
6. Give an account of DCS supervisory computer tasks.
7. In terms of workstation, explain selection of correct platform.
8. Write on software features in terms of workstation design.

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