

Scheme - I
Sample Question Paper

Program Name : Diploma in Instrumentation / Instrumentation & Control

Program Code : IS / IC

Semester : Sixth

Course Title : Distributed Control System

Marks : 70

22645

Time: 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following.

(10 Marks)

- a. Elaborate the term "PLC".
- b. List any two Programming Languages used in DCS.
- c. List any two standard displays used in DCS.
- d. Enlist any two features of Delta V DCS system.
- e. Differentiate between HUB and switch in DCS network.
- f. Elaborate H1 and HSE Fieldbus
- g. List any two manufacturers of DCS along with their product name.

Q.2) Attempt any THREE of the following.

(12 Marks)

- a. Draw a diagram for hierarchical control in automation. Explain in brief function of each level.
- b. Explain Redundancy w.r.t. DCS.
- c. Explain Sequential flow charts with suitable diagram.
- d. List the points to be considered while maintaining a DCS.

Q.3) Attempt any THREE of the following.

(12 Marks)

- a. Explain single loop integrity w.r.t. DCS.
- b. List the typical parts of DCS system hardware. Explain the function of workstation.
- c. Draw a general architecture of DCS.
- d. Explain FBD with suitable diagram.

Q.4) Attempt any THREE of the following. (12 Marks)

- a. Explain Overview display with suitable diagram.
- b. Describe bus access method of MODBUS.
- c. List different reports generated in DCS. Explain any one in detail.
- d. Define following w.r.t. DCS system: i) Tags, ii) Function block, iii) Nodes, iv) Alarms.
- e. Justify the need of security at different levels of DCS.

Q.5) Attempt any TWO of the following. (12 Marks)

- a. Draw feed forward control algorithm for a pressure control loop. Explain it.
- b. Explain trend display with diagram. Give its importance.
- c. Explain bus access method of foundation fieldbus. Give its features.

Q.6) Attempt any TWO of the following. (12 Marks)

- a. Compare MODBUS and PROFIBUS on any six points.
- b. Explain FIPBUS in detail. Give its advantages.
- c. Define algorithm. Draw a cascade control algorithm for a temperature process control loop.

Scheme - I
Sample Test Paper - I

Program Name : Diploma in Instrumentation / Instrumentation & Control
Program Code : IS / IC
Semester : Sixth
Course Title : Distributed Control System
Marks : 20

22645

Time: 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

(08 Marks)

- a. Enlist the features of Experion DCS system.
- b. List any two manufacturers of DCS along with their product name.
- c. Differentiate between Local and Remote I/O modules.
- d. List typical parts of DCS system hardware.
- e. List types of workstations. Give its function.
- f. List different types of I/O modules used in DCS.

Q.2 Attempt any THREE.

(12 Marks)

- a. Draw a general DCS architecture and explain in brief.
- b. Compare PLC and DCS on any four Points.
- c. Explain in brief - i) DDC ii) Centralized computer system.
- d. Describe the functions of following wrt DCS using diagram-
i) Controller module, ii) Power supply module.
- e. Explain the fault tolerance in distributed system. State its difference w.r.t Redundancy.

Scheme - I

Sample Test Paper - II

Program Name : Diploma in Instrumentation / Instrumentation & Control

Program Code : IS / IC

Semester : Sixth

Course Title : Distributed Control System

Marks : 20

22645

Time: 1 Hour.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

(08 Marks)

- a. List different Programming Languages used in DCS.
- b. List different standard displays used in DCS.
- c. Compare H1 and HSE Fieldbus.
- d. Enlist the types of alarms.
- e. List different reports generated in DCS.
- f. Give comparison between MAP and TOP protocol.

Q.2 Attempt any THREE.

(12 Marks)

- a. Describe the steps to create the control strategy for a process in DCS.
- b. Draw feedback control algorithm for a temperature control loop. Explain it.
- c. Explain group display with suitable diagram.
- d. Describe the alarm processing method followed in distributed control system.
- e. Explain bus access method of foundation fieldbus.