Scheme – I
Sample Question Paper

Program Name : **Instrumentation / Instrumentation & Control**
Program Code : **IS/IC**
Semester : **SIXTH**
Course Title : **Process Control**
Marks : **70** **Time: 3Hrs.**

22644

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. State principle of drying process.
b. Draw P & ID symbol for Pressure transmitter & Pneumatic valve.
c. Define Cavitation and Flashing.
d. Draw the block diagram of feed forward control system.
e. State scaling concept in ratio control.
f. Draw the neat sketch of shell and tube heat exchanger process.
g. List any two safety interlocks of boiler.

Q.2 Attempt any Three of the following. **12 Marks**

a. Draw process control diagram for a simple level control loop. Explain its functioning.
b. Draw control valve flow characteristics. Give meaning of any one.
c. Describe working of adaptive control with neat diagram.
d. State the advantages of DCS System.

Q.3) Attempt any Three of the following. **12 Marks**

a. Describe working of motion balance type valve positioned with neat sketch.
b. Compare between feedback control system and feed forward control system.
c. Draw schematic diagram of evaporation process. Explain its working.
d. State selection criteria of DCS System.

Q.4) Attempt any Three of the following. **12 Marks**

a. Differentiate between human aided process and automatic process.
b. State the limitations of butterfly valve when used in throttling services.
c. Describe working of split range control system with neat diagram.
d. Draw schematic diagram of fluidized bed dryer. Explain its working.
e. State the features of MODBUS Communication method in DCS System.

Q.5) Attempt any Two of the following. **12 Marks**

a. State the need of valve positioner. Describe with neat sketch working of Electro pneumatic valve positioner.
b. Describe working of ratio control system with neat diagram. Apply this scheme for air to fuel control in boiler process.
c. Draw the architecture of DCS System. State functions of all components in it.

Q.6) Attempt any Two of the following. **12 Marks**

a. Describe working of cascade control system. Apply this scheme for any two variable controls in distillation column process.
b. Describe working of distillation column process with neat diagram. Draw feed forward control scheme for distillation column.
c. Describe working of heat exchanger process with neat diagram. Draw override control scheme for heat exchanger.

Scheme – I
Sample Test Paper - I

Program Name : **Instrumentation / Instrumentation & Control**
Program Code : **IS/IC**
Semester : **SIXTH**
Course Title : **Process Control**
Marks : **20**

22644

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. **(8 Marks)**

a. Differentiate between human aided control and automatic control.
b. List different types of control valve flow characteristics.
c. Describe working of feed forward control system.
d. State the need of valve positioner.
e. Draw P and ID symbol of following i) pressure transmitter ii) venturi meter.
f. Define actuator. List types of actuator.

Q.2 Attempt any THREE. **(12 Marks)**

a. State the benefits of process control system.
b. Explain the working of globe valve with neat sketch.
c. Describe the working of Electro pneumatic valve positioner with neat sketch.
d. Draw the diagram of cascade control system. Explain in brief.
e. Find the proper valve size in inches and centimeters for pumping the liquid flow rate of 600 gal/min with maximum pressure difference of 55 psi, liquid specific gravity is 1.3. Find valve size.

Scheme – I
Sample Test Paper - II

Program Name : **Instrumentation / Instrumentation & Control**
Program Code : **IE.**
Semester : **SIXTH**
Course Title : **Process Control**
Marks : **20** **Time:1 Hour**

22644

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. **(8 Marks)**

a. Describe working of shell and tube heat exchanger process.
b. State the advantages of DCS System.
c. Draw cascade control system for distillation column process.
d. List different DCS Process display.
e. State purpose of instrument index sheet.
f. Draw feed forward control scheme for boiler process.

Q.2 Attempt any THREE. **(12 Marks)**

a. Describe with neat sketch the working of split range control system.
b. Draw the architecture of DCS system. State function of any two block.
c. Differentiate between batch process and continuous process.
d. Describe with neat sketch working of evaporation process.
e. Draw the neat sketch of three element control in boiler process for drum level control. Explain it in brief.