Scheme – G

Sample Test Paper-I

Course Name : Diploma in Instrumentation / Diploma in Instrumentation & Control

Course Code : IS/IC

Semester : Fifth **17540**

Subject Title : Process Instrumentation

Marks : 25 **Times: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 THREE **(9 Marks)**

a) List four different process characteristics. Give the meaning of process load.

b) State the need of signal transmission system. Specify standard ranges of electronic & Pneumatic system.

c) State the need of converters (any four points).

d) Enlist three salient features of SMART transmitter.

Q.2 Attempt any TWO **(8 Marks)**

a) Draw the diagram of flapper nozzle mechanism. Describe its working.

b) State the need of calibration in process industry (any four points).

c) Draw the diagram of voltage to current converter. Describe its operation.

Q.3 Attempt any TWO **(8 Marks)**

a) Define process lag. Give its meaning with reference to one example.

b) Draw the neat diagram of electronic temperature transmitter. State functions of any two blocks.

c) Differentiate between Electronic & Pneumatic transmission system w.r.t the following points:-

   a. Actuating Medium

   b. Signal transmission distance

   c. Compatibility with computers

   d. Use in Hazardous areas

Scheme - G

Sample Test Paper-II

Course Name : Electronic Engineering Group

Course Code : IS/IC **17540**

Semester : Fifth

Subject Title : Process Instrumentation

Marks : 25 **Times: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 THREE **(9 Marks)**

a) Classify hazardous area locations into classes and Groups.

b) Draw the diagram of Data Logger. Describe its working.

c) Describe three different types of NEMA enclosures.

d) State the importance of alarm annunciator. Where is it usually located on the control Panel?

Q.2 Attempt any TWO **(8 Marks)**

a) Draw the block diagram of X-Y recorder. State functions of any two of its components.

b) Enlist four environmental considerations for control room design.

c) Define Intrinsic Safety. Describe the working of zener barrier circuit.

Q.3 Attempt any TWO **(8 Marks)**

a) Draw block diagram of multichannel data acquisition system. State functions of any two blocks.

b) Classify Ingress Protection.

c) State four applications of recorders in process industry.

Scheme - G

Sample Question Paper

Course Name : Diploma in Instrumentation / Diploma in Instrumentation & Control

Course Code : IS/IC **17540**

Semester : Fifth

Subject Title : Process Instrumentation

Marks : 100 **Times:3 Hours**

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.1A) Attempt any THREE **12 Marks**

a) List four examples of process control system. Draw the diagram of any one.
b) Draw the diagram of flapper nozzle mechanism. Describe its working.
c) State the need of converters in process industry (any two points).
d) State four applications of Data Acquisition system in process Industries

Q.1B) Attempt any ONE **06 Marks**

a) Draw the neat diagram of Single channel data acquisition system. State functions of its components.
b) Draw the neat diagram of current to pressure converter. Explain in brief.

Q.2) Attempt any TWO **16 Marks**

a) Describe any four documents required for designing the control Panel. Draw the diagram of Flat Panel.
b) State four features of SMART transmitter. Draw the diagram of SMART transmitter. Describe its working.
c) Draw the circuit of zener barrier. Describe its working. What is its role in Hazardous area?

Q.3) Attempt any FOUR **16 Marks**

a) List four different types of process characteristics. State the meaning of any one.
b) Draw neat diagram of Strip chart recorder. Describe its working.
c) State the need of control panels in process industry (any four points).
d) Draw the block diagram of data logger. Describe its working.
e) How explosion proofing method of protection is used in hazardous area?

Q.4A) Attempt any THREE **12 Marks**

a) Classify following materials into appropriate hazardous area classes.
   1) LPG 2) Acetylene 3) Hydrogen 4) Aluminium
b) State the need of calibration in process industry(any four points).
c) Give the meaning of IP 65 and IP 54.
d) Draw the circuit of V to I converter. Describe its working.

Q.4B) Attempt any ONE **06 Marks**

a) Draw the block diagram of X-Y type recorder. Describe its working.
b) Draw the neat labeled diagram of Pneumatic DP transmitter. Describe its working.

Q.5) Attempt any TWO **16 Marks**

a) List two types of Alarm annunciators. Draw schematic diagram of a typical alarm annunciator. Describe its operational sequence.
b) Draw the diagram of breakfront control panel. State one advantage and one limitation of it. State four design considerations of control panel.
c) Draw the diagram of pneumatic DP transmitter. Describe its working

Q.6) Attempt any FOUR **16 Marks**

a) List three different type of process dynamics. State the meaning of any one.
b) List the benefits of Process Instrumentation in industries (any four points).
c) Draw the neat diagram of pressure to current converter. State functions of its components.
d) Draw the architecture of foundation field bus. State any four features of it.
e) State two applications of recorders in process industries..Differentiate between strip chart and X-Y Recorder (any two points).