

- Q.21 What are the functions of switches in process control system?
- Q.22 Explain the construction details of pressure switch.

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SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. $(2 \times 8 = 16)$

- Q.23 What is interlocking circuit? Explain the working of electrical interlocking. Where does the sequencing circuit used?
- Q.24 Define manipulated variable, controlled variable, set-point and process variable. Write any four process variable used in industries. Draw the block diagram of basic process control.
- Q.25 Find the transfer functions of PID controller. What are the advantages and disadvantages of it? Write any three applications of PID controller.

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. $(6 \times 1 = 6)$

- Q.1 The ways and methods applied in converting raw material into suitable products for the mankind is known as
a) Process variable b) Process control
c) Process d) Manipulated variable
- Q.2 The relation between output of proportional controller and the error input is
a) Both are proportional
b) Both are inversely proportional
c) Both are equal
d) No direct relation
- Q.3 In industries, a P/I converter converts (3-15) psi pressure into
a) (0-20) mA b) (4-20) mA
c) (0-10) Volts d) (10-20) psi

- Q.4 There are basically _____ parts of control valve

 - a) 3
 - b) 4
 - c) 2
 - d) 5

Q.5 Mechanical pressure switches are classified according to their

 - a) Pressure sensing element
 - b) Spring
 - c) Switch case
 - d) Construction

Q.6 A closed loop system in which only one controller is used is

 - a) Single loop control system
 - b) Multiloop control system
 - c) Cascade control system
 - d) Feedback control system

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 The desired condition of a controlled variable in process control is known as _____.

Q.8 A PD controller reduces the transients like rise time, overshoot, and oscillations in the output. (True/False)

- Q.9 Define the temperature switch.

Q.10 Proportional controller provides good stability.
(True/False)

Q.11 A _____ cylinder is a mechanism that converts energy stored in the hydraulic fluid into a force used to move the cylinder in a linear direction.

Q.12 Define set point.

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. $(8 \times 4 = 32)$

Q.13 Draw and explain the basic block diagram of the process control system.

Q.14 Define single loop and multi loop control system with example.

Q.15 Write any four applications of PD controller.

Q.16 Write any two advantages and disadvantages of using integral controller.

Q.17 Write and explain all the important components of pneumatic control system.

Q.18 Write any four difference hydraulic and pneumatic control system.

Q.19 Explain the construction details of diaphragm operated control valves.

Q.20 What are the applications of ball valves?