

[16 & A-17]

SARDAR PATEL UNIVERSITY

B. Sc. Industrial Chemistry (V)
SEMESTER – IV EXAMINATION -2018
Industrial Instrumentation and process control
SUB CODE: US04CICV02

DATE: 10TH April 2018
DAY: TUESDAY

TIME: 10:00 AM TO 1:00 PM
TOTAL MARKS: 70

Q. 1 Choose the correct answer.

[10]

- (1) Freezing point is the temperature at which the substance changes physical state and become a _____.
(A) Gas (C) Liquid
(B) Solid (D) Plasma
- (2) The temperature range covered by the industrial bimetallic thermometer is _____ F°.
(A) -50 to 100 (C) -100 to 1000
(B) -40 to 800 (D) -400 to 40
- (3) _____ is radiation temperature measurement instrument.
(A) Radiation pyrometers (C) Bimetallic thermometer
(B) Bulb thermometer (D) All of these.
- (4) 1newton per square meter _____.
(A) 1 Psi (C) 1 bar
(B) 1 Pa (D) 1 mmHg
- (5) _____ torr is the lower pressure values measure by McLeod gauge.
(A) 0.00005 (C) 0.005
(B) 5 (D) 50
- (6) The simplest of the direct devices for liquid level measurement by _____.
(A) Float type level indicator (C) Bob and tape
(B) Hook type level indicator (D) Ultrasonic
- (7) The orifice plate made by _____.
(A) Stainless steel (C) Copper
(B) Aluminum (D) Silver
- (8) Laminar flow has N_{Re} _____.
(A) <4000 (C) >4000
(B) 6000 (D) 8000
- (9) In which controller variable rapid approaches the set point it is bound to result in large overshoot _____.
(A) Derivative controller (C) Proportional controller
(B) Integral controller (D) PID controller
- (10) A controlled valve is essentially a variable orifice and hence its flow equation is _____.
(A) $CV\Delta P$ (C) PV
(B) ΔC (D) $P\Delta V$

Q.2 Answer the following short question (any ten)

[20]

- (1) Name different temperature scales used in practice with suitable symbol.
- (2) Write the principle of expansion thermometer.
- (3) Define a. Accuracy, b. Precision
- (4) Write the classification of pressure measuring device.
- (5) Write classification of level measuring instrument.
- (6) Explain foot & tape method.
- (7) Write principle of orificemeter.

- (8) Write advantages and disadvantages of venturimeter.
(9) Write principle of rotameter.
(10) Differentiate analog and digital indicator.
(11) What do you mean by ON-OFF control.
(12) Differentiate multipoint indicator and multi pointer indicator.
- Q.3 (A) Explain working of optical pyrometer. [05]
(B) Discuss mercury in glass thermometer. [05]
OR
- Q.3 Write note on thermal wall. [10]
- Q.4 (A) Write about diaphragm pressure gauge. [05]
(B) Write a note on sight glass method. [05]
OR
- Q.4 (A) Explain bellow pressure gauge. [05]
(B) Write a note on ultrasonic level detector. [05]
- Q.5 (A) Write the principle and working of venturimeter. [05]
(B) Explain working of rotameter. [05]
OR
- Q.5 (A) Write the principle and working of orificemeter. [05]
(B) Write classification of flow measuring device for closed channel and open channel flow. [05]
- Q.6 Write note on circular chart and strip chart recorder. [10]
OR
- Q.6 Write comparison, advantages and disadvantages of load, ON-OFF, Derivation P + I, P+D, PID, controller. [10]

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