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No. Of Printed Pages 2

[A-93]

SARDAR PATEL UNIVERSITY

B.Sc. Industrial Chemistry

(Semester -6TH) EXAMINATION

6th April 2016, Wednesday

Course No. : US06CICH05

(Industrial Instrumentation and Process Control)

Total Marks: 70

Time: 2:30 to 5:30pm

Q.1 Answer the given multiple choice questions.

[10]

1. Instruments which requires manual assistance is
a) Automatic c) Both a) and b)
b) Manual d) None of these
2. Solid expansion takes place in _____ thermometer
a) Resistance c) Mercury
b) Thermocouple d) Bimetallic
3. Flexible circular disc used in pressure measurement are
a) Bellows c) Diaphragm
b) Spring d) None of these
4. Force balanced device used for pressure measurement is
a) Diaphragm gauge b) Bellow gauge c) Dead Weight piston gauge d) None of these
5. The time of emptying a tank over a triangular notch is
a) Directly proportional to $H^{3/2}$ c) indirectly proportional to $H^{3/2}$
b) Directly proportional to $H^{5/2}$ d) indirectly proportional to $H^{5/2}$
6. Circular plate with a hole in it is
a) Orificemeter b) Venturimeter c) Pitot tube d) None of these
7. Rectangular notch is used to measure
a) Open channel flow b) Closed conduit flow c) Both of these d) None of these
8. The instruments which indicates result as numeric value is
a) Digital b) Analog c) Both (a and (b d) None of these
9. The constant supply of air is required in
a) Pneumatic transmission c) Both a and b
b) Electrical transmission d) None of these
10. The lag due to the property of material to store energy is
a) Capacitance lag c) Dead time lag
b) Resistance lag d) None of these

Q.2 Attempt any Ten.

[20]

- i. Explain indicating and recording type of instrument.
- ii. Write classification of instruments based on source of power required.
- iii. Write the principle of solid expansion thermometer.
- iv. Discuss Bob and Tap Method.
- v. Write classification of pressure measuring devices.
- vi. Explain u-tube manometer.
- vii. Write about Rectangular Notch.
- viii. Discuss principle of Rotameter.
- ix. Derive an equation of pitot tube.
- x. Explain central lay out.
- xi. List different types of control actions.
- xii. Discuss fixed pointer movable scale in detail.

- Q.3a)** Discuss advantages, disadvantages and working of solid expansion thermometer. [5]
b) Write a note on: Classification of Measuring instruments. [5]

OR

- Q.3a)** Discuss about resistance temperature detector. [5]
b) Explain mercury in glass thermometer. [5]

- Q.4a)** Write notes on : a) Bellow pressure Gauge [10]
b) Diaphragm pressure gauge.

OR

- Q.4a)** With the help of diagram explain working of dead weight piston gauge. [5]
b) Explain magnetic float method. [5]
Q.5a) Write principle, working construction, advantages and disadvantages of Venturimeter. [10]

OR

- Q.5a)** Write classification of open channel flow measuring devices. Also derive an equation for Triangular notch. [10]

- Q.6a)** Write the difference between Analog and Digital type indicator. [5]
b) Explain feedback and feed forward control system. [5]

OR

- Q.6a)** Discuss ON-OFF control. Also discuss different types of lags. [10]

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