

[ 22 ]  
A-16

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Sardar Patel University  
S.Y. B.Sc. Industrial Chemistry Vocational,  
US04CICV02 - Semester 4  
Industrial Instrumentation and Process Control  
9<sup>th</sup> April 2016

Time: 10:30am to 01:30 pm

Total Marks:70

Q1. Answer the following multiple choice questions.

[10]

- In centigrade scale  $100^{\circ}$  is assigned as \_\_\_\_\_  
a. Pour point    b. Ice point    c. Moisture point    d. Steam point
- The Reaumur scale is often used in \_\_\_\_\_ industries.  
a. Fertilizer    b. Alcohol    c. Cement    d. Petrochemical
- Which of the following is also known as Fahrenheit absolute scale?  
a. Reaumur    b. Rankine    c. Celcius    d. Kelvin
- Which of the following is not a unit of pressure?  
a. atm    b. Pascal    c. Micron    d. None of the above
- 1 Pascal = \_\_\_\_\_  $N/m^2$   
a. 3.14    b. 0.7    c. 1    d. 2
- Mercury is \_\_\_\_\_ times higher than water.  
a. 7    b. 100    c. 41    d. 14
- Theoretical velocity of pitot tube is \_\_\_\_\_.  
a.  $\sqrt{2gh}$     b.  $2gh$     c.  $3gh$     d.  $4gh$
- Orifice meter work on the principle of \_\_\_\_\_.  
a. Differential area    b. Across the area    c. Both a & b    d. None of these
- A device used for increasing the strength of the signal is \_\_\_\_\_.  
a. Amplifier    b. Radio    c. Transmitter    d. None of them
- The instrument which indicates result as numeric value is \_\_\_\_\_.  
a. Digital    b. Analog    c. Both    d. none

Q-2 Answer the following: (Any Ten)

[20]

- Define precision.
- List the various temperature scales.
- Explain direct and indirect measuring devices
- Write down the principle of bourdon pressure gauge.
- Define: Repeatability and Reproducibility.
- Give the names of various flow rate measuring instruments.
- Explain in detail classification of Liquid level measuring methods.
- Explain dip stick method for liquid level measurement.
- Define: i) Decay ratio.    ii) Response time.
- Write down the flow equation for venturi tube
- Define: i) Overshoot.    ii) Process
- Write down the advantages of Automatic control system.

- Q - 3 (a) Explain in detail classification of instruments based on functions and working [10]
- OR
- Q - 3 (a) Discuss Mercury in glass thermometer in detail. [05]  
(b) Explain in detail construction and working of bimetallic thermometer. [05]
- Q - 4 (a) Explain in detail importance of level measurement in chemical industries [05]  
(b) With neat sketch explain float methods for liquid level measurement [05]
- OR
- Q - 4 With neat sketch give construction and working of bourdon tube [10]
- Q - 5 Write principle, construction, working, advantages and disadvantages of orifice meter. [10]
- OR
- Q - 5(a) Explain working of Rota-meter. [05]  
(b) Give the importance of fluid flow measurement. [05]
- Q - 6 Explain controlling of batch and continuous process. [10]
- OR
- Q - 6 With neat diagram explain in detail the flow diagram of automatic feedback system. [10]

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