



# MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : ME705B INDUSTRIAL INSTRUMENTATION

Time Allotted : 3 Hours

Full Marks :70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

## Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[ 1 x 10 = 10 ]

- (I) Where the float level switches may be designed?
- (II) In a strain measuring device using a strain gauge the output quantity is.....
- (III) Float and shaft method is suitable for \_\_\_\_\_type of tank
- (IV) Boiler drum level measurement can be done by.....
- (V) The electrical methods of level measurements are.....
- (VI) The length of displacer is upto \_\_\_\_\_.
- (VII) To measure viscosity of liquids having viscosity as high as 10000 poise, we use \_\_\_\_\_.
- (VIII) In hydra step system, the voltage appearing at the electrode is restricted to.....
- (IX) What are the positive displacement flowmeters .
- (X) A vortex flowmeter is typically made of \_\_\_\_\_ stainless steel.
- (XI) \_\_\_\_\_ is the empirical number that indicates the effect of changes of temperature on viscosity of fluid.
- (XII) \_\_\_\_\_ is a device used to measure flow in open channels.

## Group-B (Short Answer Type Question)

Answer any three of the following

[ 5 x 3 = 15 ]

2. What is the difference between constant-current and constant- temperature anemometers? [ 5 ]
3. What is the principle of doppler type ultrasonic flow meter? [ 5 ]
4. What are the applications of load cell? [ 5 ]
5. What is principle used in Optical Pyrometer? [ 5 ]
6. What is pressductor? [ 5 ]

## Group-C (Long Answer Type Question)

Answer any three of the following

[ 15 x 3 = 45 ]

7. (a) Explain the working of a Bourdon gauge. What is special about its cross section? [ 7 ]
- (b) With the help of a neat sketch, explain how a McLeod gauge helps accurate measurement of pressure. [ 8 ]
8. (a) Explain Turbine flow meter. [ 8 ]
- (b) Explain the principle of operation of Angular momentum mass flow meter [ 7 ]
9. (a) Explain the principle of operation of calibration of flow meter. [ 8 ]
- (b) Explain the methods of hydrostatic type of liquid level measurement system. [ 7 ]
10. (a) Explain the working of gamma ray based level measuring instrument. [ 9 ]
- (b) Explain how differential pressure sensing is employed in a closed tank to measure level. [ 6 ]
11. (a) Explain the principle and working of centrifugal gas densitometer. [ 8 ]
- (b) Explain the construction and working of rotameter. [ 7 ]

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