

'T' Scheme

Sample Question Paper

Program Name : Diploma in Instrumentation / Diploma in Instrumentation and Control

Program Code : IS/ IC

Semester : Third

Course Title : Industrial Measurements

Max. Marks : 70

22335

Time : 3 Hrs.

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FIVE of the following.

10 Marks

- a. Define primary and secondary transducer
- b. List any four different units of pressure
- c. Sketch the neat diagram of float level measurement
- d. Define laminar flow and turbulent flow
- e. State working principle of thermocouple
- f. Classify the following transducers on the basis of 'active and passive'
 - i) strain gauge
 - ii) thermocouple
- g. List any two applications of ultrasonic level measurement

Q.2 Attempt any Three of the following.

12 Marks

- a. Describe with neat sketch working principle of electromagnetic type flow meter
- b. Explain with neat labelled sketch the working of the LVDT
- c. State the following for Bourdon tube and Bellow
 - i) Material of construction
 - ii) Range of pressure
- d. Differentiate between orifice plate and venturi tube with reference to
 - i) pressure drop
 - ii) construction
 - iii) shape
 - iv) range
 - v) cost

Q.3) Attempt any Three of the following.

12 Marks

- a. Explain with labeled sketch, the working principle of Bourdon tube.
- b. Explain with neat sketch the working of optical pyrometer temperature measuring device.
- c. Explain with neat sketch the working of Radar type level measurement

d. Calculate output resistance of RTD pt100 at temp 50°C and 100° temperature.

Q.4) Attempt any Three of the following.

12 Marks

- a) Provide the range for level measurement in float type and capacitance type when liquid is in a state of i) Conducting ii) Non conducting
- b) Explain with neat labelled sketch working of bimetallic thermometer.
- c) State any eight points selection criteria of transducer used for suitable application
- d) Explain with neat labelled sketch the working of ultrasonic flow meter
- e) Convert the value of 520 mm of Hg into bar and psi units

Q.5) Attempt any Two of the following.

12 Marks

- a) Explain with neat labelled sketch the electrical pressure transducer Bourdon tube – LVDT with reference to i) working ii) merits
- b) Describe calibration procedure of K type thermocouple digital temperature indicating instrument with neat sketch and reading in the range of 0 to 1000°C
- c) Describe Rotameter flow measuring device with reference to i) construction ii)working iii) merits

Q.6) Attempt any Two of the following.

12 Marks

- a) Describe vortex type flow measuring device with reference to i) construction ii)working ii) merits
- b) Describe with neat labelled sketch the Capacitance level measurement with reference to i) calibration procedure ii) merits
- c) Describe calibration procedure of RTD pt100 digital temperature indicating instrument with neat sketch and reading in the range of 0 to 200°C

'I' Scheme

Sample Question Paper

Program Name : Diploma in Instrumentation / Diploma in Instrumentation and Control

Program Code : IS/ IC

Semester : Third

Course Title : Industrial Measurements

Max. Marks : 20

22335

Time : 1 Hour

Instructions:

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
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- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.

08 Marks

- a. Differentiate between active and passive transducer with example
- b. Define gauge factor with its relationship
- c. State merits of LVDT
- d. List different pressure measurement methods
- e. Sketch the diagram of Bourdon tube LVDT Pressure measurement
- f. Differentiate between orifice plate and venturi tube

Q.2 Attempt any THREE.

12 Marks

- a. State selection criteria of transducer for suitable application
- b. Explain with neat diagram the working of piezoelectric transducer
- c. State the principle of working of capacitive transducer and its merit.
- d. Describe with neat labelled sketch working of diaphragm with strain gauge electrical pressure transducer
- e. Explain with neat sketch the calibration procedure of pressure measuring instrument using dead weight tester
- f. Describe with neat labelled sketch working of Rotameter

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Q.1 Attempt any FOUR.

08 Marks

- a) State working principle of electromagnetic magnetic flow meter
- b) List specifications of ultrasonic flow meter for measuring tank height
- c) Give classification of level measurement method
- d) Sketch the neat diagram of air purge level measurement technique
- e) Differentiate between RTD and thermistor
- f) Explain the working of bimetallic strip thermometer

Q.2 Attempt any THREE.

12 Marks

- a) Describe with neat sketch the working of turbine type flow meter
- b) Differentiate between pyrometer and thermocouple temperature measuring device
- c) State specifications of capacitance level measurement and its merits
- d) Explain with neat sketch the working of nuclear level measurement.
- e) Describe with neat sketch calibration procedure of temperature measurement using pt100
- f) State specifications of J type and K type thermocouple