17434

21314

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any <u>SIX</u> of the following:** **12**

i) Classify transducer in detail.

ii) State selection criteria of transducer.

iii) Define absolute pressure, atmospheric pressure.

iv) List variable flow meter.

v) State laminar and turbulent flow.

vi) State temperature and list units of temperature.

vii) Draw the different shapes of thermisters.

viii) Draw DC tachometer neatly.

Marks

b) **Attempt any <u>TWO</u> of the following:** **8**

a) Draw venturimeter and write steps to measure flow rate.

b) Draw Bourdon tube with LVDT setup for pressure measurement.

c) List the different level measurement methods.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Draw the following and write application of each.

i) Well type manometer.

ii) Bellows.

b) Draw ultrasonic flow meter and explain it's construction.

c) List advantages and disadvantages of Radiation type level measurement method.

d) Convert 30°C temperature into kelvin, faranite units.

e) State humidity and draw hair type hygrometer.

f) State working principle of piezoelectric transducer with diagram.

3. Attempt any <u>FOUR</u> of the following: **16**

a) Compare active transducer with passive transducer based on working principle, example, advantage, application.

b) Draw and describe construction and working of Bourdon tube.

c) State the use of RADAR and list two advantages.

d) Draw neat labelled diagram of optical pyrometer.

e) List two advantages and disadvantages of photoelectric pickup transducer.

f) Describe construction of Bimetalic thermometer.

Marks

4. Attempt any <u>FOUR</u> of the following: **16**

a) State working principle of capacitive type level sensor with diagram.

b) Draw and describe constructional diagram of RVDT.

c) State seeback and peltier effect.

d) List non contact type transducer and compare them on the basis of any two factors.

e) Draw labelled dead weight tester.

f) List applications of thermocouple and thermistors.

5. Attempt any <u>FOUR</u> of the following: **16**

a) Describe the construction of orifice plate flow meter.

b) Calculate the output resistance of PT100 RTD for temperature values 35°C and 85°C.

c) Write example of each type

i) Primary transducer

ii) Active transducer

iii) Electrical transducer

iv) Digital transducer.

d) List two application and two advantages of ultrasonic flow type transducer.

e) Describe the working principle of dry and wet bulb thermometer.

Marks

6. Attempt any <u>FOUR</u> of the following: **16**

a) Which transducer is suitable for temperature measurement in industries. List units of temperature and show it's conversion procedure.

b) Draw the characteristics of LVDT and compare LVDT and RVDT with any two points.

c) Compare variable head flow meter with variable area flow meter. (four points only)

d) Describe the need of level measurements.

e) List two advantages of capsule bellows.

f) How strain gauge is used for pressure measurement, explain.

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