17551

14115

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>THREE</u> of the following:** **12**

(i) What is measurement? State its basic requirements and significance.

(ii) Explain construction and working of LVDT.

(iii) State law of intermediate temperature and law of intermediate metals.

(iv) Describe measurement and control system used in D.C. motor speed control with neat block diagram.

b) **Attempt any <u>ONE</u> of the following:** **6**

(i) How errors are classified? Explain observational error with neat figure.

(ii) Draw neat labelled diagram of hot wire anemometer.

Marks

2. Attempt any TWO of the following: **16**

a) Explain working of capacitive transducer with neat figure. Write its advantages, disadvantages and applications. What is the principle of strain gauge.

b) Explain the construction and working of unbounded strain gauge.

c) Explain with neat figure the radiation pyrometer. Give its advantages, disadvantages and applications.

3. Attempt any FOUR of the following: **16**

a) Define following dynamic characteristics of an instrument:

(i) speed of response

(ii) measuring lag.

(iii) fidelity

(iv) dynamic error.

b) Explain with neat figure the construction and working of Pirani gauge.

c) State Seebeck, Peltier and Thomson effect.

d) Describe with neat figure the construction and working of rotameter.

e) Explain with neat figure sling psychrometer.

f) Explain measurement and control system used in air conditioner with neat block diagram.

4. a) Attempt any THREE of the following: **12**

(i) Explain with neat figure the construction and working of ionization gauge.

(ii) Explain with neat figure the resistance temperature detector (RID).

(iii) Draw a neat diagram of electrical tachometer. Explain its working.

(iv) Explain proportional plus integral (P+I) control action with neat figure.

Marks

b) **Attempt any <u>ONE</u> of the following:** **6**

(i) Explain with neat figure eddy current dynamometer. Give its advantages and disadvantages.

(ii) Give the comparison of hydraulic, pneumatic and electronic control system on the basis of their capacity, accuracy, cost and applications.

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

a) Explain construction and working of Bourdon tube pressure gauge. Give its advantages and limitations.

b) Explain the following with neat figure:

(i) Turbine meter

(ii) Ultrasonic flow meter.

c) Explain the following with neat block diagram:

(i) Feedback control system

(ii) Feed forward control system.

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

a) Explain active and passive transducer with suitable example.

b) Explain construction and working of R.V.D.T.

c) Explain construction and working of pressure gauge thermometer.

d) Explain with neat figure the sight glass method of liquid level measurement.

e) Explain ON-OFF controller with neat figure.

f) Explain with neat figure the construction and working of McLeod pressure gauge.

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