17551

11920

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. Attempt any FIVE of the following: **20**

a) Classify the instruments based on their functions.

b) Explain working of capacitive transducer with neat figure.

c) Draw block diagram of automatic control system.

d) Explain working of liquid in glass thermometer with neat figure.

f) Explain working of hair hygrometer with neat figure.

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

Marks

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

a) Define the following static characteristics of an instrument:

(i) Rang

(ii) Span

(iii) Accuracy

(iv) Precision

b) Explain the working of LVDT with neat figure.

c) Draw neat figure of bimetallic thermometer and explain its working.

d) Describe working of ultrasonic flow meter with neat figure.

e) Explain bob and tape method for liquid level measurement with neat figure.

f) Compare hydraulic and pneumatic control systems. (any four points of comparision)

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

a) Define the following static characteristics of an instrument.

(i) Drift

(ii) Sensitivity

(iii) Repeatability

(iv) Reproducibility

b) Explain working of RVDT with neat figure.

c) State the law of intermediate temperature and intermediate metals.

d) Explain working of hot wire anemometer with neat figure.

e) Draw neat figure of tool dynamometer and write its working.

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

Marks

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

a) Define the following dynamic characteristics of an instrument:

(i) Speed of response

(ii) Fidelity

(iii) Dynamic error

(iv) Overshoot

b) Explain working of pirani gauge with neat figure.

c) Draw neat figure of thermocouple. State the functions of thermocouple wires.

d) Explain working of turbine meter with neat figure.

e) Describe working of stroboscope with neat figure.

f) Explain with neat figure the feed back control system.

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

a) What is observation error in instrument? How it can be reduced?

b) Explain working of diaphragm gauge with neat figure.

c) Explain RTD with neat figure.

d) Explain servo mechanism with neat figure.

e) Draw neat labelled figure of slipping clutch tachometer. State its applications.

f) Explain measurement and control system used in motor speed control with neat block diagram.

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

a) Explain active and passive transducer with suitable examples.

b) Draw neat figure of Bourdon tube pressure gauge and explain its working.

c) Explain working of radiation pyrometer with neat figure.

d) Describe piezo and thermo resistive transducer with suitable examples.

e) Explain working of bonded strain gauge with neat figure.

f) Describe proportional plus derivative (P + D) control action with neat block diagram.