17561

11718

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.

(8) Use of Steam tables, logarithmic, Mollier's chart is permitted.

Marks

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

(i) Define static and dynamic characteristics of an instrument. State any four static characteristics of an instrument.

(ii) State principle of radiation pyrometer. Draw neat sketch of optical pyrometer.

(iii) Explain sight glass type direct level measurement of liquids. Enlist any four methods of level measurement of liquids.

(iv) Describe principle of ultrasonic flow meter.

b) **Attempt any ONE of the following:** **6**

(i) Explain the working of Mc leod guage with diagram.

(ii) Explain carcade control with block diagram.

P.T.O.

Marks

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

a) Compare open loop and closed loop system (any four)

b) Explain the working of C-type Bourdon tube with diagram.

c) Explain the factors to be considered while going for valve selection.

d) Explain in brief the elements of computer aided measurement and control.

e) List application of PLC and DCS.

f) Distinguish between single seated and double seated valve (with four points)

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

a) Describe with neat sketch resistance temperature detector.

b) Give the principle of air-purge system for level measurement.

c) Explain the construction and working of bellows.

d) Explain the construction and working of thermal flowmeter.

e) Compare the performance of P, PI, PD and PID controller. (4 points)

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

(i) State principle of thermocouple. Draw neat sketch of it.

(ii) State the principle of bimetallic thermometer. Describe its working with a neat diagram.

(iii) State difference between variable head meter and variable area meter. (4 points)

(iv) State the principle of positive displacement flow meter. State two advantages of rotating vane meter and also state any one application.

b) Attempt any ONE of the following: **6**

(i) Enlist types of control valve. Give the function of valve actuator.

(ii) Draw the block diagram for PLC architecture, and explain.

Marks

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

a) Describe the working of turbine flow meter.

b) Name the equipment used for measuring the level of corrosive and abrasive liquids. Explain its working.

c) Explain the working of capacitance level indicator.

d) Explain the working of LVDT.

e) Convert 20 atm into:

(i) Pa

(ii) bar

(iii) mm of Hg

(iv) kgf/cm^2

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

a) Describe the working of pneumatic PID controller.

b) Explain valve characteristics.

c) With a neat block diagram explain distributed control system. (DCS) used in process industries.

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