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C20-AEI-305

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**BOARD DIPLOMA EXAMINATION, (C-20)
JUNE/JULY—2022**

DAEI - THIRD SEMESTER EXAMINATION

PROCESS INSTRUMENTATION

Time : 3 hours]

[Total Marks : 80

PART—A

3×10=30

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. List any three types of transducers.
2. Define hysteresis.
3. State the principle of moving coil type velocity transducer.
4. State the principle of resistance temperature detector.
5. List any three types of temperature transducers.
6. Draw the diagram of membrane diaphragm.
7. List any three applications of thermal flow meter.
8. Draw the diagram of pitot tube.
9. List any three applications of nucleonic level gauge.
10. Define viscosity.

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PART—B

8×5=40

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **eight** marks.
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 11.** (a) Explain the principle of operation of variable capacitance pressure transducer with a diagram.

(OR)

- (b) Explain the principle of operation of C-shaped Bourdon tube pressure transducer with a diagram.

- 12.** (a) Explain the principle of operation of electromagnetic flow meter with a legible diagram.

(OR)

- (b) Explain the principle of operation of positive displacement type flow meter with a legible diagram.

- 13.** (a) Explain the principle of operation of resistive type level indicator with a legible diagram.

(OR)

- (b) Explain the principle of operation of liquid level sight glass for level measurement with a legible diagram.

- 14.** (a) Explain the principle of operation of capillary viscometer with a legible diagram.

(OR)

- (b) Explain the principle of operation of fluid dynamic type densitometer with a legible diagram.

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15. (a) Explain the principle of operation of strain gauge load cell with a legible diagram.

(OR)

- (b) Explain the principle of operation of electrolytic hygrometer with a legible diagram.

PART—C

10×1=10

- Instructions :** (1) Answer the following question.
(2) The question carries **ten** marks.
(3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

16. A platinum resistance thermometer has a resistance $R_0 = 50.0 \Omega$ at $T_0 = 20^\circ\text{C}$. Temperature coefficient of resistance for platinum is $3.92 \times 10^{-3}(\text{°C})^{-1}$. The thermometer is immersed in a vessel containing melting tin, at which R increases to 91.6Ω . What is the melting point of tin?

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