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C20-AEI-305

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BOARD DIPLOMA EXAMINATION, (C-20)

FEBRUARY/MARCH — 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 basic requirements of transducers.
2. Define accuracy.
3. State the importance of vibration monitoring.
4. Define the term temperature.
5. List any three IC temperature sensors.
6. State the necessity of pressure multiplexer.
7. List any three applications laser anemometer.
8. State the principle of thermal flow meter.
9. List any three applications of liquid level sight glass level measurement.
10. Define density.

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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 piezo-electric pressure transducer with legible diagram.

(OR)

(b) Explain the principle of operation of thin film pressure transducer with legible diagram.

12. (a) Explain the principle of operation of ultrasonic flow meter with legible diagram.

(OR)

(b) Explain the principle of operation of turbine flow meter with legible diagram.

13. (a) Explain the principle of operation of ultrasonic level gauge with legible diagram.

(OR)

(b) Explain the principle of operation of float actuated level indicator with legible diagram.

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

(OR)

(b) Explain the principle of operation of capacitance type densitometer with legible diagram.

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

(OR)

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

PART—C

10×1=10

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

16. A platinum resistance thermometer uses the change in R to measure temperature. Assume $R_0 = 50 \Omega$ at $T_0 = 20^\circ\text{C}$. Temperature coefficient of resistance for platinum is $3.92 \times 10^{-3} (\text{C}^\circ)^{-1}$ in this temperature range. Find the resistance at temperature 50.0°C .

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