



C20-AEI-305

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**BOARD DIPLOMA EXAMINATION, (C-20)
OCTOBER/NOVEMBER—2023
DAEIE – 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. Define the term sensor.
2. List any three classifications of transducers.
3. State the importance of vibration monitoring.
4. Write the principle of thermocouple.
5. List any three types of temperature transducers.
6. Draw the diagram of single capsule.
7. List any three applications electromagnetic flow meter.
8. Draw the diagram of rotameter.
9. List any three applications of nucleonic level gauge.
10. Define the term 'viscosity'.

- 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 thin film pressure transducer with a diagram.

(OR)

(b) Explain the principle of operation of helical bourdon tube with a diagram.

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

(OR)

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

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

(OR)

(b) Explain the principle of operation of capacitive type level indicator with a diagram.

14. (a) Explain the principle of operation of displacement type densitometer with a diagram.

(OR)

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

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

(OR)

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

PART—C

10×1=10

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

- 16.** A metallic strain gauge has resistance of 120 ohm and a gauge factor of 2, it is installed on an aluminium structure which has a yield point stress of 0.2 GN/sq meter and young's modulus of 68.7 GN/sq meter, find the change in resistance of the gauge that would be caused by loading the material to yield point.

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