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C09–AEI–306

3216

BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2016

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. Define *(a)* range and *(b)* span. 1½+1½

2. State the need for calibration.

3. Draw the diagram of photoelectric tachometer.

4. List the advantages of LVDT-type displacement transducer.

5. State the operating principle of bimetal strip.

6. State the principle of operation of potentiometric pressure transducer.

7. Draw the diagrams of *(a)* diaphragm and *(b)* bellows. 1½+1½

8. List the advantages and disadvantages of electromagnetic flow-meter.

9. List the specifications of electrolytic-type hygrometer.

10. Draw the diagram of float actuated level indicator.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Explain the following terms : 2½×4=10

(a) Linearity

(b) Dynamic accuracy

(c) Transducer

(d) Hysteresis

12. Derive an expression for gauge factor in resistance strain gauge. 10

13. *(a)* Explain the principle of operation of DC tachogenerator. 5

(b) Explain the principle of operation of resistance temperature detector. 5

14. *(a)* Explain the thermocouple law and give its significance. 5

(b) Explain the principle of operation of solid-state sensor. 5

15. *(a)* Explain the principle of operation of LVDT-type pressure transducer. 6

(b) Explain the necessity of pressure multiplexer. 4

16. Explain the principle of operation of LASER Doppler anemometer with a neat diagram and list the applications. 10

17. *(a)* Explain the principle of operation of Pitot tube. 5

(b) Explain the principle of operation of capacitive-type level indicator. 5

18. Explain the principle of operation of strain gauge load cell. List the advantages and applications. 10

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