



C20-PET-503

7668

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER / NOVEMBER—2023

DPET – FIFTH SEMESTER EXAMINATION

INSTRUMENTATION AND PROCESS CONTROL

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. What are dynamic characteristics of an instrument?
2. What is meant by a first order instrument?
3. List out any three radiation receiving elements.
4. Explain briefly about the working of diaphragm pressure gauge elements.
5. Discuss the method of liquid level measurement in pressure vessels.
6. Explain briefly about the emission spectroscopy.
7. Differentiate between strip and circular recording charts.
8. Explain briefly about the signalling instruments.
9. List out the different types of control actions.
10. Explain briefly about a control valve.

- 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 working and construction of liquid column manometer with a neat sketch.

(OR)

(b) Explain the construction and working of thermocouple vacuum gauge with a neat diagram.

12. (a) Explain the construction and working of displacement meter for measuring liquid density with a neat diagram.

(OR)

(b) Describe the measurement of viscosity by viscosity meter-brabender corporation with a neat sketch.

13. (a) Explain the analysis of gases by thermal conductivity method with a neat sketch.

(OR)

(b) Explain the method of determination of the moisture content in lumber with a neat diagram.

14. (a) Draw the instrumentation diagram for an extractor and list out all the variables to be controlled.

(OR)

(b) Draw and explain the instrumentation diagram for an evaporator.

15. (a) Derive the expressions for the transfer function for PI and PID control actions.

(OR)

(b) Describe the pneumatic control for proportional integral action with a neat 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. Evaluate with a neat sketch, the construction and working of optical pyrometer.

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