C16-AEI–405

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BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

DAEI - FOURTH SEMESTER EXAMINATION

INDUSTRIAL ELECTRONICS AND CONTROL SYSTEMS

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 the applications of photo multipliers.

2. Draw the diagram of photo conductive device.

3. List any three applications of induction heating.

4. State the principle of induction heating.

5. State the importance of control engineering in day to day life and in industry.

6. List the properties of transfer function.

7. State initial value theorem.

8. Define block diagram of system.

9. Define test signals in control system.

10. Define gain margin and phase margin

PART—B

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

(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.

11. Explain the working of 'dot matrix' display and list the applications. 10

12. Explain the working of basic AC resistance welding circuit. 10

13. Explain the principle of dielectric heating with diagrams. 10

14. Explain closed loop control system with example of water level controller. 10

15. Obtain the Laplace transform of $e^{at} \sin at$. 10

16. Obtain the inverse Laplace transform of $F(s) = \frac{\omega}{s^2 + \omega^2}$. 10

17. *(a)* Derive the transfer function of *R-L-C* series circuit. 5

(b) Obtain the time response of first-order system for unit step input. 5

18. Obtain 'Bode Plot' for the following transfer functions : 10

(a) $G(s) = K$

(b) $F(s) = \frac{K}{s}$

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