



C16-AEI-405

6418

BOARD DIPLOMA EXAMINATION, (C-16)  
SEPTEMBER/OCTOBER - 2020  
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 optocouplers.
2. Draw the diagram of phototransistor.
3. List the applications of dielectric heating.
4. List the dielectrics used for dielectric heating.
5. Define control system.
6. List the limitations of transfer function.
7. State final value theorem.

- \* 8. Write Mason's gain formula.
- 9. Define type and order of a control system.
- 10. State Routh-Hurwitz criterion for stability of a system.

**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 working of photomultipliers with diagram.
- 12. Explain the circuit of high frequency power source for induction heating.
- 13. Explain the principle of dielectric heating and resistance welding.
- 14. Explain open-loop and closed-loop control systems with water level controller example.
- 15. Obtain Laplace transform for  $te^{at}$ ,  $t^n$  functions.
- 16. Obtain inverse Laplace transform for  $F(s) = \frac{1}{(s^2 + 2)}$  function.
- 17. (a) Define Laplace transform and inverse Laplace transform functions.  
(b) Define Bode plot and frequency response of a system.
- \* 18. Obtain static error coefficients  $K_p$ ,  $K_v$ ,  $K_A$ .

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