



C14-AEI-406

**4418**

**BOARD DIPLOMA EXAMINATION, (C-14)**

**OCT/NOV—2016**

**DAEIE—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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. List the applications of optocouplers.
2. State the applications of phototransistor.
3. List the different industrial heating methods.
4. List the types of resistance welding.
5. Define system and control system.
6. State the properties of transfer function.
7. State Mason's gain formula.
8. Derive the Laplace transform of unit step function.
9. Define the term 'rise time'.
10. Define absolute and relative stabilities.

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**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 photomultiplier with a diagram.
12. Draw the circuit of HF power source for induction heating and explain its working.
13. (a) Explain the working of basic AC resistance-welding circuit. 7  
(b) List any three applications of dielectric heating. 3
14. (a) Explain open-loop control system with an example. 6  
(b) Define linear control system and time invariant control system. 4
15. Derive the transfer function of liquid level system.
16. (a) Derive the transfer function of RLC series circuit. 6  
(b) Write any four rules of block diagram reduction. 4
17. (a) Resolve the following function into partial fractions : 5  
$$F(s) = \frac{2}{(s-2)(s-4)}$$
  
(b) Explain about the type of a control system. 5
18. Derive the time response of *I*-order system when subjected to unit step input.

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