



C14-AEI-406

4418

BOARD DIPLOMA EXAMINATION, (C-14)

MARCH/APRIL—2017

DAEIE—FOURTH SEMESTER EXAMINATION

INDUSTRIAL ELECTRONICS AND CONTROL SYSTEMS

Time : 3 hours ]

[ Total Marks : 80

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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.

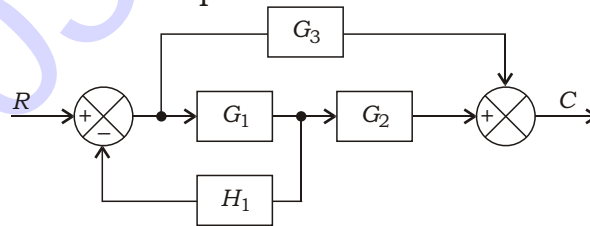
1. List the applications of photomultiplier.
2. List the applications of seven-segment display.
3. List any three dielectrics used for dielectric heating.
4. List the applications of dielectric heating.
5. Define non-linear control system and time variant control system.
6. Write the importance of control engineering in day-to-day life.
7. Define inverse Laplace transform.
8. State Mason's gain formula.
9. Define stability of system.
10. Write the statement of Routh-Hurwitz criterion.

**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. (a) Explain the working of photoconductive device. 5  
 (b) Explain the working of bar graph display. 5
12. Explain the working of basic AC resistance welding circuit. 10
13. (a) Explain the principle of operation dielectric heating. 7  
 (b) Write three applications of induction heating. 3
14. (a) Distinguish between open-loop and closed-loop control systems. 5  
 (b) State the limitations of a transfer function of system. 5
15. (a) Derive the transfer function of thermal system. 6  
 (b) Derive the Laplace transform of unit impulse function. 4
16. Determine the transfer function  $C/R$  for a system using block diagram reduction technique : 10



17. (a) Resolve the following function in to partial fractions : 5

$$F(s) = \frac{5}{(s-3)(s^2-4)}$$

- (b) Define velocity error coefficient ( $K_v$ ) and position error coefficient ( $K_p$ ). 5
18. Derive the time response of  $I$  order system when subjected to unit step input. 10

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