C09–AEI–**404**

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BOARD DIPLOMA EXAMINATION, (C–09)
OCT/NOV—2013
DAEIE—FOURTH SEMESTER EXAMINATION

INDUSTRIAL ELECTRONICS AND CONTROL ENGINEERING

Time : 3 hours]　　　　　　　　　　　　　　　[*Total Marks* : 80

PART—A

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 phototransistor.

2. Draw a neat diagram of photomultipliers.

3. List the different types of industrial heating.

4. Draw the circuit of AC resistance welding.

5. Draw a neat sketch of magnetostriction oscillator.

6. Define linear and nonlinear control systems.

7. Define order of the control system.

8. Find the Laplace transform of $\dfrac{df(t)}{dt}$.

9. Mention the time response specifications.

10. Find the static error coefficient k_p.

PART—B

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 seven-segment display. 5

(b) Explain the construction and working of photoconductive devices. 5

12. *(a)* Explain about optocouplers and solar cells. 3+3=6

(b) List the applications of dielectric heating. 4

13. Explain electrodes used in dielectric heating and method of coupling to RF generator. 10

14. *(a)* Draw and explain piezoelectric oscillator for generation of ultrasonics. 3+3=6

(b) List the applications of ultrasonics. 4

15. *(a)* List the differences between open-loop and closed-loop control systems. 5

(b) Explain time variant and time invariant control systems. 5

16. Find the steady-state error for type-1 system when input is unit-step signal. 10

17. Derive the transfer function of *R-L-C* series circuits. 10

18. Derive the following transfer function $C(s)/R(s)$: 10

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