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C09–AEI–**404**

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2017

DAEIE—FOURTH SEMESTER EXAMINATION

INDUSTRIAL ELECTRONICS AND CONTROL ENGINEERING

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. State the working of optocoupler.

2. Mention the advantages of phototransistor.

3. Mention the applications of dielectric heating.

4. Mention different industrial heatings.

5. List the applications of ultrasonics.

6. Define linear control system.

7. State the limitations of transfer function of system.

8. Define Laplace transform.

9. Define the following transient response specifications :

(a) Settling time

(b) Steady-state error

10. Define positional error constant K_p.

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 construction and working of photomultiplier.

12. *(a)* Explain about discrete displays. 5

(b) Explain about induction heating. 5

13. Explain the working of AC resistance welding with circuit diagram.

14. Draw the circuit of magnetostriction oscillator and explain its working.

15. *(a)* Distinguish between open-loop and closed-loop control system. 5

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

16. *(a)* Derive the transfer function of an *R-L-C* parallel circuit. 5

(b) Derive the Laplace transform of $\sin at$. 5

17. Derive the transfer function of thermal system.

18. Derive the time response of second-order system for unit-step input signal.

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