



C16-AEI-405

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BOARD DIPLOMA EXAMINATION, (C-16)
MARCH/APRIL—2018
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 photomultiplier.
2. List the applications of solar cell.
3. List the dielectric used for dielectric heating.
4. State the principle of resistance welding.
5. Define linear and non-linear control systems.
6. Define transfer function.
7. State initial value theorem.
8. Write the Mason's gain formula.

* 9. Define the term time response of a system.

10. Identify the type and order of the following loop function :

$$G(s)H(s) = \frac{1}{s(s^3 + 3s^2 + s + 2)}$$

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.

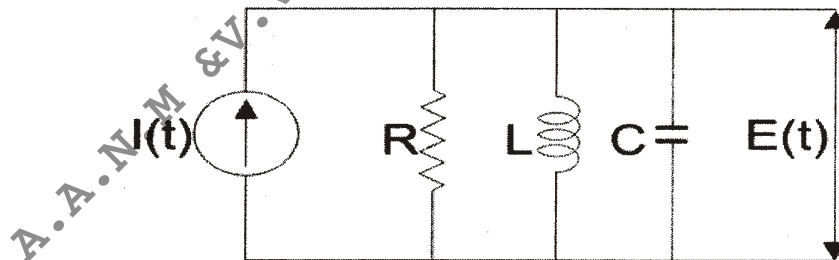
11. Explain the working of phototransistor with diagram. 10

12. Draw and explain the circuit of high-frequency power source for induction heating. 10

13. Explain the principle of basic AC resistance welding circuit. 10

14. Illustrate open-loop and closed-loop control systems with examples. 5+5=10

15. Derive the transfer functions for the following RLC parallel circuit : 10



16. Find the laplace transform of the following functions : 5+5=10

(a) e^{at}

(b) $\sin at$

- * 17. (a) Mention any five rules of the block diagram reduction. 5
(b) Define any two specifications of transient response of second-order system. 5
18. Determine the stability of a system represented by characteristic equation $s^4 + 2s^3 + 8s^2 + 4s + 3 = 0$ using Routh-Hurwitz criterion. 10

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