



C09-AEI-404

3414

BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2014

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.

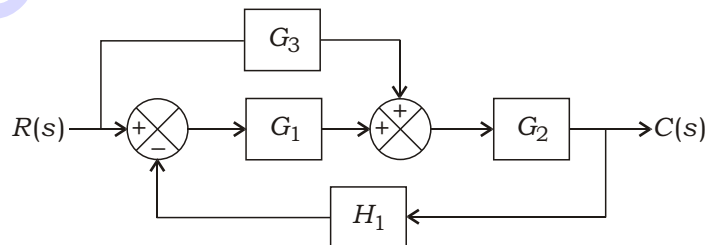
1. Write any three types of display.
2. List any three types of optocoupler.
3. List any three applications of induction heating.
4. Mention different resistance weldings.
5. List the applications of ultrasonics.
6. Draw the block diagram of closed-loop system.
7. Define inverse Laplace transform.
8. Define transfer function of a system.
9. Define damping ratio.
10. List various graphical techniques used for frequency response analysis.

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 principle and operation of an optocoupler and mention its different types.
- 12.** (a) List the applications of solar cell. 4
(b) Explain the principle of induction heating. 6
- 13.** Draw the basic circuit of AC resistance welding and explain the working.
- 14.** Explain about the various methods to generate ultrasonics.
- 15.** Explain briefly about the following : 5+5=10
(a) Linear and non-linear control systems
(b) Time variant and time invariant systems
- 16.** State and prove the following : 5+5=10
(a) Initial value theorem
(b) Final value theorem
- 17.** Find $C(s)/R(s)$ of the following block diagram :



- 18.** Derive the time response of underdamped 2nd-order system for unit-step input signal.
