



C09-EE-605 A

3766

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2016

DEEE—SIXTH SEMESTER EXAMINATION

ELECTRICAL UTILISATION AND AUTOMATION

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. Define plane angle, solid angle and luminous flux. 1+1+1=3
2. Define utilization factor, depreciation factor and waste light factor. 1+1+1=3
3. List any three advantages of electric heating. 3
4. List any three applications of resistance heating. 3
5. List any three factors governing the selection of electric drive. 3
6. List any three advantages of electric breaking. 3
7. List any three advantages of electric traction. 3
8. Define coefficient of adhesion. 3
9. List any three advantages of programmable logic controller. 3
10. Draw ladder diagrams of AND, OR and NOT gates. 1+1+1=3

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**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) State and explain inverse square law of illumination. 5  
(b) A room 9 m×12 m is illuminated by twelve 100-watt lamps. The luminous efficiency of the lamp is 30 lumen per watt and the coefficient of utilization is 0.45. Find the average illumination. 5
- 12.** (a) Explain direct resistance heating with diagram. 6  
(b) List the industrial applications of dielectric heating. 4
- 13.** Draw and explain electric circuit diagram and various parts of a refrigerator. 10
- 14.** (a) Explain different methods of electric breaking. 5  
(b) List applications of SCADA. 5
- 15.** Draw ladder diagrams using timers and counters. 10
- 16.** Derive expressions for maximum speed, acceleration and retardation of trapezoidal speed-time curve. 10
- 17.** An electric train has an average speed of 42 kmph on a level track between stops 1400 m apart. It is accelerated at 1.7 kmphs and is braked at 3.3 kmphs. Draw the speed-time curve for the run. 10
- 18.** (a) List the factors affecting specific energy consumption. 5  
(b) List the factors affecting the coefficient of adhesion. 5

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