



C14-EE-501

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BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2018
DEEE—FIFTH SEMESTER EXAMINATION

ELECTRICAL UTILIZATION

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 the following terms regarding electric lighting : $1\frac{1}{2}+1\frac{1}{2}=3$
 - (a) Utilization factor
 - (b) Depreciation factor
2. Define glare regarding electric lighting. 3
3. State the laws of illumination. 3
4. State any six requirements of good heating material. 3
5. List any six industrial applications of induction furnace. 3
6. List any six conditions for successful welding. 3

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7. State the ^{*}function of any three components in the electric circuit of a refrigerator. 3
8. Draw a neat electrical circuit diagram of car stereo wiring. 3
9. Compare between compact fluorescent (CF) lamps and tungsten filament lamps in any six aspects. 3
10. State the need of power saving devices. 3

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) Explain the production of light by ionization with a neat sketch. 5
- (b) A room 9 m × 12 m is illuminated by 12 lamps of 100 watt each. The luminous efficiency of the lamps is 30 lumen per watt and the coefficient of utilization as 0.45. Find the average illumination. 5
- ^{*} 12. In a street-lighting scheme, two lamps with candle power of 500 are mounted 5 meters above the ground level. The distance between the posts is 10 metres. Determine the illumination (a) just below the lamp posts and (b) at the mid-point between the posts. 10
13. (a) Explain direct arc furnace with a neat sketch. 5
- (b) Explain the principle of operation of coreless induction heating with a neat sketch. 5

14. (a) A piece of plywood is to be heated by dielectric heating. The area of cross-section of the piece is 0.5 m^2 and the thickness is 2.5 cm . If the frequency of $25 \text{ megacycle per second}$ is used and the power absorbed is 1000 watt , find the voltage employed necessary for heating. The relative permittivity of wood is 2.5 and power factor is 0.046 . 6
- (b) State any eight industrial applications of dielectric heating. 4
15. (a) Explain the principle of spot welding with a neat sketch. 5
- (b) Explain the principle of operation of welding transformer with a neat sketch. 5
16. (a) Explain the principle of metal arc welding with a neat sketch. 5
- (b) Explain the characteristics of welding generator with a neat sketch. 5
17. Draw a neat electric circuit diagram of an air-conditioner and state the function of each component. 10
18. (a) Explain the working of magnetic induction lamp with a neat sketch. 7
- (b) Draw a neat automatic illumination control circuit using light dependant resistors (LDRs). 3
