6442

BOARD DIPLOMA EXAMINATION

JUNE - 2019

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING

ELECTRICAL UTILISATION & TRACTION

FOURTH SEMESTER EXAMINATION

Time: 3 Hours **Total Marks: 80**

PART - A (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. List any three advantages of semi-direct lamp fittings
2. Define (a) Lumen (b)Candle Power
3. List any three requirements of good heating material.
4. List any three applications of dielectric heating
5. List any three advantages of remote operated power utility devices
6. State any three factors to be considered for STAR ratings of various electrical appliances
7. State any three advantages and disadvantages of Electric traction
8. State the methods of improving coefficient of adhesion
9. State the requirements of Train lighting
10. Define elementary section in traction system

PART - B (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. In a street lighting scheme, lamps with candle power of 500 are hung at a height of 5meters. The distance between the posts is 10meters. Determine the illumination (a) under the lamps and (b) at the midpoint between the posts

12. Explain the production of light by

    (a) Excitation

    (b) Ionization

    (c) Fluorescence

    (d) Phosphorescence.

13. Explain the principle of operation of coreless type induction Furnace with a neat sketch

14. (a) State the use of LED lamps in energy conservation for street

    (b) Compare LED lamps with tungsten filament lamps in any five aspects

15. An electric train has quadrilateral speed-time curve as follows.

    (i) Uniform acceleration from rest to 2 kmph for 30 seconds

    (ii) Coasting for 50 seconds (iii) Breaking period of 20seconds

    The train is moving a uniform up gradient of 1%; tractive resistance is 40 newtons per ton; rotational inertia effect 10% of dead weight; duration of station stop 15seconds and overall efficiency of transmission gear and motor is 75%. Calculate the value of its schedule speed and specific energy consumption of run if the distance travelled by the train is 1.03km

16. Derive the expression for (a) Maximum speed (b) Acceleration and Retardation for Trapezoidal Speed time curve

17. a) **State the requirements of train lighting.** **4M**

    b) Explain Mid-on generation with a neat sketch 6M

18A. Explain the indirect resistance heating with a neat sketch

B. Explain the method of obtaining constant output in electric traction

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