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C09-EE-605A

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BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2018

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 the terms solid angle and illumination with its units.
2. Define lamp efficiency and polar curves.
3. State the requirements of good heating element.
4. State the disadvantages of core-type induction heating.
5. Explain the use of flywheel in electrical drives.
6. What are the advantages of electric braking?

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7. Define maximum speed and schedule speed in traction system.
8. Write a short note on Bow collector.
9. Draw the Ladder Diagram for Nand gate.
10. State the advantages of PLC.

PART—B

10×5=50

Instructions : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) The answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Two lamps of 200 candle power are arranged at a distance of 100 m from each other and at a height of 15m and 30m respectively. Calculate the Illumination below each Lamp and in the middle of the lamps.
12. Explain the construction and operation of core-type induction heating with neat sketch.
13. (a) Explain Regenerative Breaking of a DC Shunt motor.
(b) Draw the Ladder diagram for DOL starter.
14. Explain the plugging method of Electric Braking for DC Motors.
15. Derive an expression for the Maximum speed of a Trapezoidal speed time curve.

16. A 500 tonne goods train is to be hauled by a locomotive up a gradient of 2% with an acceleration of 1.2 kmphps, co-efficient of adhesion is 25%, track resistance 40N/tonne and effect of rotating masses 10% of dead weight. Find the weight of Locomotive and the Number of Axles if axle load is not exceed 21 tonnes.
17. Explain different current collectors used in Electric traction.
18. (a) Draw the Ladder diagram for AND, NAND and OR gates.
(b) State the input and output devices of PLC.
