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BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL-2019
DEEE - SIXTH SEMESTER EXAMINATION
ELECTRIC TRACTION & P L C

Time: 3Hrs

Max. Marks: 80

PART-A**10x3=30M**

Instructions: 1) Answer all the questions. Each question carries Three marks
2) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1) List the advantages and disadvantages of electric traction.
- 2) Write a brief notes on 1-phase track electrification.
- 3) Define (a) maximum speed (b) average speed (c) schedule speed.
- 4) Define coefficient of adhesion.
- 5) Explain tractive effort.
- 6) Draw the neat sketch of a traction motor controlled by an auto transformer.
- 7) List the advantages of PLC?
- 8) What is SCADA?
- 9) List different types of PLCs.
- 10) Define actuator.

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PART-B

10x5=50M

Instructions: 1) Answer any five questions Each question carries 10 marks
2) Answer should be comprehensive and the criterion for valuation is the content but not length of the Answer.

- 11) (a) Sketch the speed time curves of urban and sub urban services.
(b) Explain the factors that affect the schedule speed.
- 12) Derive an expression for the maximum speed of a trapezoidal speed-time curve.
- 13) Derive an expression for the tractive effort.
- 14) A train runs at an average speed of 45 km/hr. between stations situated 1.5km apart. the train accelerates at 1.5kmphps and retards 3kmph ps. Find the maximum speed assuming a trapezoidal speed time curve. Calculate also the distance travelled by it before brakes are applied. 10M
- 15) A sub urban electric train has a maximum speed of 60 kmph. Schedule speed of 42.5 kmph and a station stop of 31 secs. if acceleration is 1.2 kmphps, Find the value of braking retardation, if the average distance between stops is 3km and find the value of average speed. 10M
- 16) Explain memory of a PLC. 10M
- 17) Draw and explain the ladder diagram for NAND and NOR gates. 10M
- 18) Draw and explain the ladder diagram for stair case lighting. 10M

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