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C14-EE-602

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BOARD DIPLOMA EXAMINATION, (C-14)

JUNE-2019

DEEE –SIXTH SEMESTER EXAMINATION

ELECTRIC TRACTION

Time: 3 Hours]

[Max. Marks : 80

PART-A

10x3=30M

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

- 1) Classify the various systems of track electrification used in traction.
- 2) State the factors which affects the schedule speed.
- 3) Define specific energy consumption.
- 4) In electric traction, where insulated overlaps are preferred?
- 5) What is the importance of neutral section in traction.
- * 6) What is the material used for catenary and what is the purpose of catenary.
- 7) List the major equipments in a traction substation.
- 8) List the protective devices provided for traction transformer.
- 9) State the method of obtaining unidirectional polarity.
- 10) List the requirements of railway AC coach.

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PART-B

5x10=50M

Instructions: 1) Answer any **five** questions.
2) Each question carries **ten** marks.
3) Answers should be comprehensive and the criteria for valuation is the content but not the length of answer.

- 11) (a) What is the importance of speed- time curve. (3M)
(b) A sub-urban electric train has a maximum speed of 65kmph, schedule speed of 43.5kmph and a station stop of 30 seconds. The average distance between stops is 3km. If acceleration is 1.3 kmphps, find the value of braking retardation. (7M)
- 12) Define tractive effort and derive expression of it for the following periods
(a) acceleration (b) free running (c) up-gradient.
- 13) The average speed of an electric train is 40 kmph on a level track between two stops of 2.5km apart. Determine the specific energy consumption if the acceleration and retardations are 2 kmphps and 3.1 kmphps. Take rotational inertia as 12%, track resistance as 60N/Ton and overall efficiency 80%, also draw the speed -time curve.
- 14) Draw the neat sketch of single catenary construction of OHE and explain.
- 15) What is the necessity of signals. Draw the symbols of the following signals and explain in brief
(i) caution indicator (ii) warning indicator (iii) refuge indicator
(iv) stop indicator (v) level cross indicator
- 16) (a) Explain booster transformer with a neat diagram. (6M)
(b) Explain types of pantographs. (4M)
- 17) (a) List the considerations for location of traction substation.
(b) Explain about Mid-on - Generation
- 18) Explain with a diagram about feeding and sectioning arrangements.

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