4744

BOARD DIPLOMA EXAMINATION, (C-14)
OCTOBER/NOVEMBER-2018
DEEE-SIXTH SEMESTER EXAMINATION

ELECTRIC TRACTION

Time : 3 Hours]   [Total Marks: 80

PART-A

3X10=30

Instructions   :   1. Answer **All** questions.

2. Each question carries THREE marks

3. Answer should be brief and straight to the point

1. Define (a) Maximum Speed (b) Average Speed and (c) Schedule Speed.

2. Sketch the Speed-Time curves of urban and Sub-urban services.

3. What are the factors affecting Specific Energy Consumption.

4. Mention the purpose and material used for

   (a) Catenary (b) Droppers (c) Trolley wires.

5. State the methods of Raising and lowering of paragraph.

6. State the need of Booster Transformer.

7. List the various constituents of supply systems.

8. What is mid on generation?

9. What are requirements of train lighting?

10. Write short notes on single battery system.

PART-B

10X5=50

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

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

3. Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

11. Derive the expression for (a) Maximum speed (b) Acceleration & Retardation for Trapezoidal speed time curve.

12. An electric locomotive is required to haul a train of 12 coaches each weighing 30 tonne on the main line service requiring an initial acceleration of 0.8kmphps up a gradient 1 in 100. Estimate the adhesive weight and hence number of driving axles the locomotive must have if permissible axle loading is 20 tonne per axle. Assuming relational inertia to be 4% for the coaches and 15% for locomotive. Maximum co-efficient of adhesion is 0.2 and tractive resistance 5kg/tonne.

13. An electric train weighing 200 tonne has a rotational inertia of 12%. The train runs between two stations which are 3km apart. It has an average speed of 45 kmph. The acceleration and braking retardation are 1.5kmphps and 2.5kmphps respectively. The percentage up gradient is 2%. The track resistance and overall efficiency are 50 N/tonne and 85% respectively. Estimate (a) Maximum power at the driving axle. (b) Specific Energy consumption.

14. Explain with legible sketch the construction

(a) Diamond Pantograph (b) Faiveley pantograph

15. Describe (a) Single catenary construction (b) Compound catenary construction.

16. (a) Explain with legible sketch the control of Traction motor by auto Transformer

method in single phase 25 KV systems.

(b) State the important requirements of traction motor.

17. (a) Describe feeding posts pertaining to supply systems with a neat sketch.

(b) Describe Circuit breaker equipment at traction substation.

18. Describe Transformer protection for AC traction.

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