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C09–EE–**605C**

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2017

DEEE—SIXTH SEMESTER EXAMINATION

ELECTRICAL TRACTION AND RENEWABLE ENERGY SOURCES

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 maximum speed and schedule speed.

2. What are the factors affecting the specific energy consumption?

3. Draw the connection diagram of a booster transformer.

4. Draw the speed-time curve.

5. Name the essential components of a flat plate solar collector.

6. List the applications of PV systems.

7. Name the different types of tidal power plants.

8. Define fill factor.

9. Draw the KVIC digester plant.

10. List the applications of combined working power plant.

PART—B

10×5=50

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

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

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

11. Derive an expression for the specific energy consumption of a trapezoidal speed-time curve.

12. An electrical train has an average speed of 42 kmph on a level track between stops 1400 m apart. It is accelerated at 1·7 kmphps and braked at 3·3 kmphps. Draw the speed-time curve for the run.

13. *(a)* Discuss briefly the train lighting.

(b) Draw and explain the booster transformer.

14. The distance between two stations is 1 km and the schedule speed is 30 kmph. Station stop time is 20 second. Assume braking retardation is 3 kmphps and maximum speed of 1·25 times the average speed. Assume trapezoidal speed-time curve. Determine the acceleration required for the run.

15. *(a)* Explain the domestic water heating system.

(b) Explain the electrical characteristics of a PV cell.

16. *(a)* Explain the vertical axis windmill.

(b) Define direct and diffused radiation.

17. *(a)* Name the different types of biogas plants.

(b) How is biomass related to electricity?

18. Explain, with block diagram, the working of combined cycle power plant.

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