



C09-EE-605C

**3768**

**BOARD DIPLOMA EXAMINATION, (C-09)**  
**MARCH/APRIL—2017**  
**DEEE—SIXTH SEMESTER EXAMINATION**  
**ELECTRICAL TRACTION AND RENEWABLE**  
**ENERGY SOURCES**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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 kmphs and braked at 3·3 kmphs. 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 kmphs 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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