



C09-EE-605 C

3768

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DEEE—SIXTH SEMESTER EXAMINATION

**ELECTRIC TRACTION AND RENEWABLE
ENERGY SOURCES**

Time : 3 hours]

[Total Marks : 80

PART—A

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. State the significance of speed-time curve.
2. List any three factors affecting specific energy consumption.
3. Sketch bow collector and pantograph collector.
4. State the necessity of booster transformer.
5. List the different types of conventional energy sources.
6. List three advantages of solar electric system.
7. State three applications of PV system.
8. Mention any six solar thermal devices.
9. State the site requirements for installation of tidal power plant.
10. What do you understand by combined cycle power plant?

PART—B

- 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.** The scheduled speed of an electric train is 42 kmph between two stations which are 2.5 km apart. The maximum speed is 1.5 times the average speed and braking retardation is 1.2 kmphs. Assume trapezoidal speed-time curve. Calculate the acceleration required to run the service. Station stopping time is 30 seconds. 10
- 12.** (a) Define coefficient of adhesion. Mention any three methods to improve coefficient of adhesion. 5
 (b) Discuss briefly about the train lighting. 5
- 13.** A train weighing 120 tonne is to be driven up an incline of 2% at a speed of 36 kmph. If train resistance at this speed is 2 kg/tonne, find the current required at 1500 V d.c. if the efficiency of motors and gearing is 88%. If current were cut off, how long would the train take to come to rest? 10
- 14.** Explain the suitability, advantages of DC series motor and three-phase induction motor for electric traction. 10
- 15.** Explain the construction and working of a flat-plate solar collector. 10
- 16.** Explain the working principle of a windmill with a neat sketch. 10
- 17.** (a) List any five advantages of floating-drum type biogas plant. 5
 (b) Classify the tidal power plants. 5
- 18.** Explain the working of a combined cycle power plant with the help of a block diagram. 10
