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Question Paper Code : 20469

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Eighth Semester

Electrical and Electronics Engineering

EE 6801 – ELECTRIC ENERGY GENERATION, UTILIZATION AND
CONSERVATION

(Regulations – 2013)

(Common to PTEE 6801 – Electric Energy Generation, Utilization and
Conservation for B.E. Part-time – Seventh Semester – Regulations 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the different types of electric drives.
2. Mention the pantograph current collector.
3. Define luminous flux.
4. List some of the energy saving lighting.
5. Write down the methods of electric heating.
6. Mention the advantages of coreless induction furnace.
7. Define solar constant.
8. List the factors affecting solar irradiance.
9. Classify different types of wind turbines.
10. Mention the aspects considered for selecting wind turbine location.

PART B — (5 × 16 = 80 marks)

11. (a) A train weighing 200 tonnes uses regenerative braking on a down gradient of 2% when the speed is changed from 60 Km/h to 20 Km/h over a distance of 4 kms. Determine the electrical energy and average power returned to the supply system. Assume tractive resistance of 40 N/ tone, rotational inertia of 10% and efficiency of conversion of 75%. If the regenerative braking does not change the speed down the gradient, determine the power fed into the supply system. (16)

Or

- (b) Explain the mechanism of train movement with its speed time curve. (16)

12. (a) (i) Describe the factors responsible for lighting scheme for roads. (10)
(ii) Draw the fluorescent lamp circuit. (6)

Or

- (b) A 200 c.p. lamp is hung 4 metres above the centre of a circular area of 5 metre diameter. Determine the illumination at the (i) Centre of area (ii) Periphery of the area (iii) Average illumination. Also determine the average illumination if reflector of 80% efficiency is used. (16)
13. (a) (i) Discuss the requirements of the good heating materials. (8)
(ii) Demonstrate the steps to be used for designing a heating element. (8)

Or

- (b) Describe the working principle and types of electric arc welding. (16)
14. (a) (i) List the advantages and disadvantages of concentrating collectors. (10)
(ii) Discuss about solar radiation geometry. (6)

Or

- (b) Describe the principles of conversion of solar radiation into heat energy. (16)
15. (a) Describe the various components of a WECS and the power generated from WECS. (16)

Or

- (b) Illustrate the basic theory of wind turbine blade aerodynamics. (16)