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**Question Paper Code : 70487**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

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) - Electrical and Electronics Engineering - Seventh Semester  
(Regulation 2014))

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define electric drive.
2. Mention any two characteristics of the electric traction.
3. State the Lambert's cosine law of illumination.
4. Define the terms Lumens and Lux.
5. What are the requirements of good heating material to be used in electric heating?
6. Compare AC and DC welding.
7. What is meant by solar constant?
8. Write the advantages of the renewable energy sources.
9. How does a wind turbine produce electricity?
10. Write the appropriate equation for determining the wind power.

PART B — (5 × 13 = 65 marks)

11. (a) What are all the factors influencing the choice of electrical drives? (13)

Or

- (b) (i) List the requirement of electric traction system. (6)  
(ii) Explain DC series traction motor control. (7)
12. (a) An illumination of 75% flux is to be provided in a work shop hall measuring 40 m and 10m determined the no and rating of lamp when seven stresses are provided at mutual spacing of 5m. Assume depreciation factor of 0.8, coefficient of utilization as 0.4 of a lamp is 15 lumens/w. (13)

Or

- (b) (i) List the properties of good lighting. (6)  
(ii) With a neat diagram explain the construction and working of sodium vapour lamp. (7)
13. (a) Describe the construction operation of a transformer used for electric arc furnaces. (13)

Or

- (b) What are the various method of electric heating? What are the factors which influence the poor power quality. (13)
14. (a) Discuss the working principle of solar power plant. (13)

Or

- (b) Describe briefly the classification of solar PV system. (13)
15. (a) Briefly explain about the major components of wind energy system. (13)

Or

- (b) Derive the expression for maximum axial thrust experienced by a wind turbine and also discuss about the limitation for such operation. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss in detail the various types of lighting schemes adopted in illumination engineering. (15)

Or

- (b) Elucidate the performance analysis of a cylindrical and parabolic concentrating solar collector. (15)