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Question Paper Code : 80511

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

Eighth Semester

Electrical and Electronics Engineering

EE 2451/EE 81/10133 EE 801 – ELECTRIC ENERGY GENERATION,
UTILIZATION AND CONSERVATION

(Regulations 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term Cogeneration.
2. Why Biomass Energy generation is treated as Renewable Energy?
3. What are the components of fixed cost and running cost?
4. Name some energy efficient equipments.
5. Define luminous efficacy.
6. What is the importance of street lighting system?
7. What is meant by resistance arc welding?
8. List a few applications of dielectric heating.
9. What are the disadvantages of electric traction?
10. What are the recent trends in electric traction?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Draw the general layout of thermal power plant and explain the parts involved. (10)
- (ii) Write short notes on combined operation of power station. (6)

Or

(b) (i) Explain in detail about Nuclear power plant. (10)

(ii) List the advantages and disadvantages of Nuclear power plant. (6)

12. (a) The load on a power plant on a typical day is given below :

Time : 12 – 15 A.M. 5 – 9 9 – 6 6 – 10 10 P.M. – 12 A.M.

Load in MW : 20 40 80 100 20

Plot the load duration curve. Find the load factor of the plant and the energy supplied by the plant in 24 hours. Also suggest the size and number of generating units. (16)

Or

(b) (i) Explain the reasons why power factor tariff is imposed. Explain clearly the procedure for finding out the capacity of the shunt capacitor required for an existing installation for improvement of power factor. (10)

(ii) What is tariff? Discuss and compare various tariffs used in practice. (6)

13. (a) Explain the working of a high pressure mercury vapour lamp with a neat sketch. (16)

Or

(b) (i) Explain Flood lighting with necessary definitions. (8)

(ii) State and explain laws of illumination. (8)

14. (a) Explain the process and various methods of electric arc welding. (16)

Or

(b) (i) A furnace consuming 5kW takes 15 minutes to just melt 2.5 Kg of Aluminum, the initial temperature being 15°C. Find the efficiency of the furnace when the specific heat of Aluminum is 0.212 cal/gm/°C, Melting point is 658°C and latent heat of fusion is 320 J/gm. (10)

(ii) What are the differences of AC welding and DC welding? (6)

15. (a) (i) Draw the Speed-Time curve of a traction system. Also explain the various periods and the actions. (8)
- (ii) A train has a scheduled speed of 50 kmph over a level track, distance between stations being 1.8 Kms. Station stopping time is 30 Seconds. Assuming braking retardation of 3 Kmphps and maximum speed 50% greater than average speed, calculate acceleration to run the service. (8)

Or

- (b) (i) Explain the various types of electric traction systems. (8)
- (ii) A train runs with an average speed of 50 Kmph. Distance between stations is 2.5 Km. Values of acceleration and retardation are 1.8 Kmphps and 2.4 Kmphps respectively. Calculate the maximum speed of the train assuming trapezoidal speed-time curve. (8)
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