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Question Paper Code : 11257

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2014.

Eighth Semester

Electrical and Electronics Engineering

080280079 — ELECTRIC POWER UTILISATION AND ENERGY AUDITING

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the terms :
 - (a) Lumen
 - (b) Lux.
2. State the merits of gaseous discharge lamps over filament lamps.
3. State the Stephan's law of radiation. Give the equation.
4. What factors govern selection of motor for a drive?
5. Give the formula for total tractive effort.
6. Draw the speed time curve of sub-urban service.
7. How is the capacity rating of battery specified?
8. State faraday's law of electrolysis.
9. Define cost-benefit analysis.
10. What is the need for energy audit?

PART B — (5 × 16 = 80 marks)

11. (a) You are required to provide an illumination of 100 LUX in a seminar hall 40 X 10 m and efficiency of lamp is 14 Lumens/watt. Assume that DF-0.8 and UF-0.8. Calculate the number of lamps and rating and their position when trusses are provided at mutual distance of 5m.

Or

- (b) Explain the process of dielectric heating and derive an expression for power loss.

12. (a) Discuss the factors which make D.C. series motor suitable for electric traction.

Or

- (b) A train is required to run between two stations 1.6km apart at an average speed of 40 kmph. The run is to be made into simplified speed-time curve. If maximum speed is to be limited to 64 kmph, acceleration 2 kmphs, coasting retardation 0.16 kmph, breaking retardation 3.2 kmphs, determine the duration of acceleration, coasting and breaking periods.

13. (a) (i) Explain the steady state characteristics of drives.
(ii) Explain the classification of loads and its characteristics.

Or

- (b) Explain the modern methods of speed control of industrial drive.

14. (a) Define the capacity rating of a battery. Give its unit. Explain any one method of battery charging.

Or

- (b) Explain the following :
- (i) Electrolyte concentration
 - (ii) Nature of Electrolyte and its temperature
 - (iii) Throwing power
 - (iv) Polarization.

15. (a) Explain :
- (i) Energy saving measures in fans and Blowers
 - (ii) How energy audit helps in energy conservation?

Or

- (b) Explain in detail about power factor improvements using power capacitors.
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