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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Semester VII

EE9402 UTILISATION AND CONSERVATION OF ELECTRICAL ENERGY

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Mention any four applications of motors for particular services.
2. Write short note on trolley collector.
3. Define Illumination and Brightness.
4. Define specular reflection and diffuse reflection.
5. Define conduction, convection and radiation.
6. What are the advantages of coated electrodes?
7. Mention some of the applications of refrigeration.
8. What are the main parts of the equipment in air conditioning cycle?
9. Define load factor and diversity factor.
10. What are the various methods available for reducing the power factor in a motor?

Part - B (5 x 16 = 80 marks)

11. A train runs between two stations 2 km apart at an average speed of 40 km/h. The run is to be made according to simplified quadrilateral speed-time curve. If the maximum speed to be limited to 60 km/h, acceleration to 2 km/h/s, coasting retardation to 0.15 km/h/s and braking retardation 3 km/h/s, determine the duration of acceleration, coasting and braking periods.
12. a) Explain the construction and working of a fluorescent (tube) lamp.
(OR)
b) In detail describe the flood lighting and factory lighting.
13. a) With a necessary diagram describe the principle, advantages and applications of

dielectric current heating

(OR)

b) With a suitable diagram explain the metallic arc welding and carbon arc welding.

14. a) Describe the construction, working, electric circuit and maintenance of domestic refrigerator.

(OR)

b) Explain the working of a central and unitary Air-conditioning system.

15. a) Derive the heating and cooling curve of a motor with necessary assumptions.

(OR)

b) A motor has a thermal heating time constant of 45 minutes when the motor runs continuously on full-load, its final temperature rise is 80°C . (i) What would be the temperature rise after 1 hour, if the motor runs continuously on full-load? (ii) If the temperature rise on 1 hour rating is 80°C , find the maximum steady-state temperature at this rating. (iii) How long will the motor take for its temperature rise from 50°C to 80°C , if it is working at its 1 hour rating?