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B.E./B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APR/MAY 2019

ELECTRICAL AND ELECTRONICS ENGINEERING

SEMESTER VII – (REGULATIONS 2012)

EE 8703 – UTILIZATION AND CONSERVATION OF ELECTRICAL ENERGY

Time: 3 hrs

Max Marks: 100

Answer ALL Questions

Part A – (10×2=20)

1. Mention any two advantages of electric drive
2. What happens to the train movement during coasting period?
3. List out any two applications of arc lamp
4. State the reasons for using tungsten as filament for a incandescent lamp.
5. Name any one method to heat insulators uniformly
6. Write down the basic working principle of resistance welding
7. Explain the principle of operation of solar cell
8. Define solar constant
9. Mention any two applications of stand-alone wind systems.
10. Discuss the role of induction machine in wind mills.



Part B – (5×16=80)

11. (i) Assuming trapezoidal speed time curve of train movement, derive an expression for maximum speed and average speed in metre per second (8)
(ii) An electric train has an average speed of 42km/h on a level track between stops 1400m apart. It is accelerated at 1.7km/h/s and is braked at 3.3 km/h/s. Draw the speed time curve for the run. (8)
 12. a.(i) Explain the working of a fluorescent tube with the help of circuit diagram. (8)
(ii) With suitable diagram, describe the principle of operation of high pressure mercury vapour lamp. (8)
- OR
- b. Discuss the design procedure for factory and flood lighting schemes. (16)
13. a.(i) Derive suitable expressions for finding dimension of circular heating element. (8)
(ii) With necessary diagrams, describe high frequency eddy current heating. (8)

OR

b. With suitable sketches, explain various resistance welding processes. (16)

14.a. With required diagram, explain the principle of operation of concentrating collectors. Discuss their merits and demerits. (16)

OR

b. (i) Derive an expression to estimate the average solar radiation available on earth. (8)

(ii) Mention and explain any one application of flat plate collector. (8)

15.a.(i) List out different components of WECS and discuss with suitable diagrams. (8)

(ii) What are the factors considered for site selection of WECS? Describe in detail. (8)

OR

b.(i) Derive the expression for average power extractable from wind. (8)

(ii) Classify wind turbines, based on their configuration and describe their working principle with suitable diagrams. (8)

