

Code: 9A02802

R09

B.Tech IV Year II Semester (R09) Advanced Supplementary Examinations June/July 2016

UTILIZATION OF ELECTRICAL ENERGY

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) State and explain the laws of illumination.
(b) A room measuring 30 m x 15 m is to be illuminated by 10 lamps and the average illumination is to be 85lux. Determine the MSCP of each lamp if the utilization and depreciation factors are 0.5 and 0.8 respectively.
- 2 (a) Discuss briefly about induction and dielectric heating process.
(b) A low frequency induction furnace whose secondary voltage is maintained constant at 10 V takes 300 kW at 0.75 p.f. When the heat of the charge and reactance remains constant, find the height up to which the hearth should be filled to obtain maximum heat.
- 3 (a) By using resistance and electric arc furnace, explain how electric welding is achieved.
(b) Discuss briefly about:
(i) Arc welding.
(ii) Gas welding.
- 4 (a) Discuss the power supply for electrolysis process and mention some applications of it.
(b) What is electrolysis? Write advantages of using this processing method.
- 5 (a) What is an electric drive? Explain the advantages of a drive.
(b) What do you understand by load equalization?
- 6 (a) What are the special features of traction motors?
(b) Make a comparison between AC and DC traction systems.
- 7 With the help of speed-time curve, define and explain the importance of following factors in a traction system:
(a) Notching period.
(b) Accelerating period.
(c) Free running period.
(d) Coasting period.
(e) Braking period.
- 8 (a) Explain about effect of varying acceleration and braking retardation in the electric traction systems.
(b) Derive the expression for tractive effort for propulsion of a train up and down a gradient.
