

Total No. of Pages: 1
8th Semester
Mid Sem Examination
Paper Code: EE-444
Time : 1:30 Hrs.

Roll No.....
B. Tech. Electrical
Mar. 2019
Subject: Utilization of Electric Energy
Max. Marks: 20

Note: Answer any two questions. Each question carries equal marks.
Assume suitable missing data if any.

- 1) (a) Define Luminous flux, Luminous intensity, Luminance, Illuminance, Luminous efficacy and their respective SI units. Explain the importance of SHR and Polar curve in illumination.
(b) A drawing hall 30mx13m with ceiling height of 5m is to be provided of with general illumination of 120 lux. Taking coefficient of utilization of 0.5 and depreciation factor (DF) as 1.4, determine the number of fluorescent lamps required, their spacing, mounting height and total wattage. Luminous efficacy of 80 W fluorescent lamp is 40 lumen/watt. Show the disposition of lamps with sketch verifying SHR lying between 0.9-1.5.
- 2) (a) Explain the principle of the dielectric heating. What are the parameters responsible for dielectric heating and their limitations. Give typical industrial applications of dielectric heating.
(b) A piece of an insulating material is to be heated by dielectric heating. The size of the piece is 10x10x3 cm. A frequency of 20MHz is used and the power absorbed is 400 W. The material has a relative permittivity of 5 and a power factor of 0.05. Calculate the voltage necessary for heating and the current flows in the material.
3. Write short note on any four:
 - (i) Resistance Heating and design features of the heating element,
 - (ii) Consumable and non-consumable electrodes used in arc welding,
 - (iii) LED driver circuits and relative merits
 - (iv) Electro-magnetic and electronic ballasts and stroboscopic effect in fluorescent tubes
 - (v) Infrared heating and microwave heating and their applications,