TE/Insem/APR - 16
T.E. (Electrical)
UTILIZATION OF ELECTRICAL ENERGY
(2012 Pattern) (Semester - II)

Time : 1 Hour]   *[Max. Marks : 30*

Instructions to the candidates :

   1)   *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*

   2)   *Neat diagrams must be drawn wherever necessary.*

   3)   *Assume suitable data, if necessary.*

   4)   *Figures to the right indicate full marks.*

Q1) a) Describe the working of electric oven with diagram & write its applications.   **[6]**

     b) Explain principle of LASER welding with its applications, merits & demerits.   **[4]**

<div align="center">OR</div>

Q2) a) A 15 kW, 220 V, single phase, resistance oven employs Nickel - Chrome wire for its heating elements. If the wire temperature is not to exceed 1000°C & the temperature of the charge is to be 600°C, calculate the diameter & length of wire. Assume radiating efficiency to be 0.6 & emissivity 0.9. For Nickel - Chrome wire, resistivity is 1.016×10^{-6} ohm - meter.   **[6]**

     b) Describe (high frequency) coreless induction furnace with diagram, advantages & disadvantages.   **[4]**

Q3) a) Draw & explain the working principle of electrolysis with chemical equations.   **[6]**

     b) Give the applications of anodizing.   **[4]**

<div align="center">OR</div>

Q4) a) Explain briefly vapour compression refrigeration cycle with sketch. **[6]**

b) Draw & explain electrical circuit used in air conditioning. **[4]**

Q5) a) Define & explain following terms : **[6]**

  i) Space to height ratio

  ii) Utilization factor

  iii) Maintenance factor

b) A lamp of 500W having MSCP 1250 is suspended at 2.7 m above the working plane. Calculate the : **[4]**

  i) Illumination directly below the lamp at working plane.

  ii) Lamp efficiency.

  iii) Illumination at appoint 3 m away on horizontal plane from vertically below the lamp.

OR

Q6) a) State & explain factors to be considered while designing the lighting schemes. **[6]**

b) Explain the operation & Construction of CFL with suitable diagram.**[4]**

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