

Total No. of Questions : 6]

SEAT No. :

P517

[Total No. of Pages : 2

APR - 18/TE/Insem. - 117

T.E. (Electrical)

UTILIZATION OF ELECTRICAL ENERGY

(2015 Course) (Semester - II)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.
- 2) Figures to the right indicate full marks.

Q1) a) What properties should be possessed by a good heating element and what are various reasons of heating element failure? **[4]**

b) A 40 kW, 3 phase, 400 V resistance oven is to employ Ni-Cr strip of 0.3 mm thickness. The heating elements are connected in delta, if the temp of wire to be 1200°C and that of charge is 700°C. Determine length and width of wire. Take radiation efficiency 0.5, emissivity as 0.9 & specific resistance as $1.03 \times 10^{-6} \Omega \text{m}$. **[6]**

OR

Q2) a) Write a short note on Spot welding with neat sketch. **[4]**

b) The power required for dielectric heating of slab of resin, 150 cm² in area and 2 cm thick is 200 W at frequency of 30 MHz. The material has a relative permittivity of 5 and p.f. 0.05. Find the voltage necessary and current through material. If voltage is limited to 700 V, what will be the frequency to obtain same heat? **[6]**

Q3) a) If 17.5 gm of nickel is deposited by 90 A current flowing for 9 min. How much copper would be deposited by 45 A current in 5 min? The atomic weight of Nickel = 58.6 and that of Copper = 63.18. Valency of both is 2. **[4]**

b) Draw an electric circuit diagram used in Air Conditioning and Explain in brief. **[6]**

OR

P.T.O.

Q4) a) What is a need of electro-deposition and factors governing electro-deposition? [4]

b) Explain Vapour compression cycle used in refrigeration system and write difference between Vapour compression and Vapour evaporation cycle. [6]

Q5) a) Compare Incandescent lamp and Gas Discharge lamp. [4]

b) A hall of 25 * 20 meter area with a ceiling height of 6 m is to be provided with general illumination of 300 Lux, taking a coefficient of utilization of 0.8 and depreciation factor of 1.4. Determine the no. of tubes required considering suitable space to height ratio. Take luminous efficiency of tube 25 lumens/w for 300 W tube and show the arrangement. [6]

OR

Q6) a) Explain Flood lighting scheme in brief. [4]

b) Two lamps having uniform intensity 500 CP in all directions are mounted at height of 10 m from ground and are separated by a distance of 20 m apart. Find the illumination at a point on ground 12 m from first lamp. [6]

