



STANLEY
COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN
(Approved by AICTE , New Delhi | Affiliated to Osmania University ,Hyderabad)
Address : Chapel Road, Abids ,Hyderabad

EE 451

UTILIZATION

UNIT-I

Industrial Heating: Advantages and methods of electric heating. Description, operation and performance of resistance ovens. Design of elements. Core type furnace, Coreless type furnace, High frequency eddy current heating, Dielectric heating, Arc furnace. Electric Welding: Resistance welding, welding transformer and its rating. Various types of Electric arc welding and electric resistance welding.

UNIT-II

Schematic Utilization and connection diagram for motor control. Two Supply sources for 3-phase Induction motors. Direct reversing, remote control operation, Jogging operation of induction motor. Contactor control circuit. Pushbutton control stations. Over load relays, limit switches, Float switches. Interlocking methods for reversing control. Starting of Synchronous motor and motor protection.

UNIT-III

Illumination: Introduction, nature and production of light, Sensitivity of the eye, Units of light. The inverse square law and cosine law, Solid angle, Lighting calculations, determination of M.S.C.P, Rouseau's construction, Discharge lamps, Sodium vapour lamps, Mercury vapour lamps, Fluorescent lamps, Starting and power factor corrections, Stroboscopic effects, Neon signs, Application to factory lighting, Street lighting and Flood lighting.

UNIT-IV

Electric Traction: System of Electric Traction, transmission of Drive, System of track electrification, Traction mechanics, Speed time curves, tractive effort, power of Traction motor, Specific energy consumption, Mechanics of train movement, Coefficient of adhesion.

UNIT-V

Traction Motors: Desirable characteristics, d.c series motors, a.c series motors, 3-phase induction motors, d.c motor series & parallel control, Shunt bridge transition, Energy saving. Batteries: Lead acid batteries, SMF batteries, Construction and maintenance, Charging and rating of Batteries.

Suggested Reading:

1. Partab G, Art and Science of Utilization of Electric power, Dhanpatrai & Sons, 1990.
2. K.B.Raina & S.K.Bhattacharya, Electrical Design, Estimating and Costing, Wiley Eastern Ltd., 1991.
3. G.K.Dubey, Fundamentals of Electric Drives, Narosa Public House, Delhi, 2001