Subject Code : RACSY84D

Basic Engineering for Textiles

UNIT – I

Elements of Mechanical Engineering – I

Fuels: Definition – types of fuel –merits and demerits of liquid and gaseous fuel.
Boilers: Definition – Types of fire tube and water tube boilers
Suction: Principles of suction, wet and dry vacuum cleaner.
Pumps: study of working of reciprocating pump and centrifugal pump comparison between hem.
Air Compressors**:** Definition – study of working of reciprocating Air Compressor. Uses of compressed air in textile industry.
Refrigeration: Definition –study of refrigerator – study of air conditioner – Principles of humidification.
Bearings**:** Need for bearings – Type – Bush, Ball and Roller, needle bearings for different working conditions.

UNIT - II

Elements of Mechanical Engineering – II

Lubrication – Purpose of lubrication – types of lubricants
Clutch – functions of clutch
Brakes – function – principle and working of Hydraulic and pneumatic brake – difference between a clutch and a brake.
Transmission of Motion and power – Belt, drive – Flat belt, V- belt, advantages of each belt system
Chain drive Types – advantages
Gear drive: Applications of spur, bevel, helical gears.
Worm and worm wheel – and epicyclical gear — PIV variable speed drive.
Cams: Definition – types of cams – types of followers and their functions.

UNIT - III

Elements of Electrical Engineering.

Electro Magnetism and its application in Textile industry – Induction – Lenz's law Fleming's right hand & left hand rule.
D. C. generator – working principle – type of D.C generators – Principles and brief study of D.C. Motor – 3 Point and 4 point generator.
Altering Current – Definitions – frequency, time period, Amplitude cycle RMS value, Power factor, Peak factor – idea inductance and capacitance in A.C. Circuit.

Comparison of single phase with three phase AC star system
Types of AC Motor – Principle of working of synchronous motor – Principles of Induction Motor – Starters of Induction motor.

UNIT - IV

Elements of Electrical And Civil Engineering :

Transformer – working principles - types.
Brief study of electrical measuring instruments – Voltmeter, Ammeter, watt water – Energy meter.
Brief Study on the Preparation of foundation for Textile machine – super structure – fibre prevention doors and windows for textile industry, roofing and its advantages, false roofing
Requirement for textile buildings to control floods and fire.

UNIT - IV

Elements of Electronic Engineering:

Introduction : Atomic structure – Electron flow – Evolution of the Electron tubes.
Electron emission - different methods – Photo eclectic effect working principle of photo electric cell and its uses.
Conductor – Isolator – semi conductor – extrinsic and intrinsic semi conductors – N types and P type semi conductors. PN Junction – Forward bias and Reverse Bias – Rectifiers – half wave, full wave & rectifiers – Zener diode – Principles and uses.
Transistors : NPA & PNP transistors – Uses of transistors. Electronics instruments – Cathode Ray Tube – Digital multimeter.
Transducers: Advantages of transducers – Classification transducers – Principles of Strain Gauge.

Reference Books:

1. A.S.Saro, Thermal Engineering Sathiya Prakasan Publisher
2. R.S.Kumar A Text Boo of Hydraulics Fluid Mechanics and Hydraulic Machines Publisher
3. V.Sivarajan Mechanical Technology V.K.Publisher Publisher
4. S.K. Battacharya Elements of workshop technology Vol.11Publisher