ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

Multidisciplinary Course

w.e.f. AY 2023-24

SEMESTER-III

BASIC Electronics

Credits: 2   2 hrs/week

UNIT-I: (10 hrs)

Brief History of Electronics, Overview of Atom and its particles, Voltage, Current & Resistance. Ohms Law, Series and Parallel Circuits, Short and Open circuit. Usage of Digital multimeter.

Power Sources: DC and AC, Electrical energy, consumption of electrical power, Kilowatt hour (KWh). Batteries: How to Choose a Battery, types, lead acid batteries, Nickel – Cadmium, Lithium – Ion & Solar cell.

Identifying Phase, Neutral and Earth on power sockets, Electric tester, First aid for electric shock. Basics of House wiring, Overloading, electrical circuit protection using Fuses, MCBs, earthing and its necessity, awareness of electrical safety tools.

UNIT-II: (10 hrs)

Classification of solids according to electrical conductivity (Conductor, Semiconductor & Insulator). Intrinsic & Extrinsic Semiconductors. Vacuum Tubes, Diodes, Transistors, ICs & Relays: advantages, disadvantages, applications, and their uses.

Transducers and Sensors: Advantages, various parts, types, and applications, LED, IR LED, Photo Resistor & Photodiode (Symbol & applications of each)

DC Regulated Power Supply, IC Voltage Regulators, UPS

Home Appliances: Electric geyser, micro wave oven and refrigerator

UNIT-III: (10 hrs)

Basics of Communication Systems: Transmitter, Receiver, Channel i) wired channels ii) wireless channels, Modulation, Demodulation.

Daily usage of Electronic Devices include: Mobile phones, Digital Camera, audio & video systems, TV (Television), Computer, Laptop, LED lights, GPS, iPod and Tablets, Wi-Fi and Internet. Importance of energy efficiency in electrical appliances.

Electronics in different fields: Information processing, Medicine and research, Computers and other electronic instruments, Automation.

Resource Material

(1) Electrical technology by V.K. Mehta & Rohit Mehta (S. Chand & Company Pubs.)

(2) Few references from Wikipedia free Encyclopedia.