

SHRI R. K. PARIKH ARTS AND SCIENCE COLLEGE, PETLAD.

ADD-ON CERTIFICATE COURSE FOR SCIENCE

Course Title : Basics of Electronic components

Coordinator : Prof. K. R. Trivedi

Department : Physics

Duration : 30 Hours [Theory: 15 hrs., Practical: 15 hrs]

COURSE CONTENT:

1. Ohm's law, Definitions of EMF, Current, Potential Difference, Power and Energy
2. Self-induction, Mutual induction, Faraday's law of electromagnetic induction.
3. Alternating current, Define cycle, frequency, periodic time, amplitude, RMS value.
4. Resistors: Classification of resistors, Materials used for resistors, color Coding, LDR.
5. Capacitors: Materials used for capacitors, working voltage, capacitive reactance, various types of capacitors.
6. Inductors: Various Types and applications of inductors.
7. Transformers: Construction and working of transformer, types of transformers.
8. Diodes : Construction and working of diodes, types of diodes, special types of diodes and their applications.
9. Transistors : Construction and working of transistors, applications of transistors.
10. Integrated circuits: Pin identification.
11. Protective devices: Fuse, relay, MCBs.

Experiments:

1. Measurement using meters: Current meter, voltmeter, galvanometer, multimeter.
2. Check battery potential and determine polarity by the use of multimeter.
3. Measurement of resistance and capacitance using multimeter and verification of color code.
4. Measurements of electric and electronic components using multimeter.
5. Resistor (LDR) in detection and measurement of light.
6. Use of bread board.
7. Measurement using CRO.
8. Explain RC time constant for a 555 Timer IC.

OUTCOMES OF COURSE:

- BASIC understanding of electric and electronic components.
- Develop fundamental knowledge electronic component measurement.
- Understand behavior of electrical and electronic circuits.
- Understand basic laws of electricity and various applications.

References:

1. Basic Electronics & Linear Circuits by Bhargava & Gupta, McGraw Hill Education, New Delhi.
2. A text book of Electrical Technology by B. L. Theraja, S.Chand Publication.
3. Basic electronics by V.K.Mehta, S.Chand Publication.

Web Resources:

1. <http://www.animations.physics.unsw.edu.au/jw/AC.html>
2. https://en.wikipedia.org/wiki/Electronic_component