

B.Sc. (Electronics) Syllabus, Kakatiya University, Warangal CBCS pattern in Semester System (w. e. from 2016-2017)

**B.Sc. (ELECTRONICS) – I year
Semester - II
Paper – II :: Electronic Devices**

**Total number of hours : 48
No. of hours per week : 4**

UNIT-I

PN Junction: Formation of PN junction, Depletion region, Junction capacitance, Diode equation (no derivation) Effect of temperature on reverse saturation current, V-I characteristics and simple applications of i) Junction diode, ii) Zener diode, iii) Tunnel diode and iv) Varactor diode.

UNIT-II

Bipolar Junction Transistor(BJT): PNP and NPN transistors, current components in BJT, BJT static characteristics (Input and Output), Early effect, CB, CC and CE configurations of transistor and bias conditions (cut off, active, and saturation regions), CE configuration as two port network, h-parameter model and its equivalent circuit. Determination of h-parameters from the characteristics. Load line analysis (AC and DC). Transistor Biasing – Fixed and self bias.

UNIT- III

Field Effect Transistor (FET): Construction and working of JFET, output and transfer characteristics of FET, Determination of FET parameters. Application of FET as voltage variable resistor. Advantages of FET over BJT. **MOSFET:** construction and working of enhancement and depletion modes, output and transfer characteristics, Application of MOSFET as a switch.

Uni Junction Transistor (UJT): Construction and working of UJT and its Characteristics. Application of UJT as a relaxation oscillator.

UNIT- IV

Silicon Controlled Rectifier (SCR): Construction and working of SCR. Two transistor representation, Characteristics of SCR. Application of SCR for power control.

Photo electronic Devices: Construction and Characteristics of Light Dependent Resistor (LDR), Photo voltaic Cell, Photo diode, Photo transistor and Light Emitting Diode(LED).

Books Recommended:

- 1) Electronic Devices and circuits - Millman and Halkias,(TMH)
- 2) Principles of Electronics - V.K.Mehta & Rohit Mehta
- 3) Electronic Devices and Circuits - Allen Moltershed(PHI)
- 4) Basic Electronics and Linear Circuits - Bharghava U
- 5) Electronic Devices and Circuits - Y.N.Bapat
- 6) Electronic Devices and Circuits - Mithal.
- 7) Electronics Devices and Circuits - Salivahanan and Suresh
- 8) Experiments in Electronics - S.V.Subramanyam.



Dr. B. Venkatram Reddy
Chairman, Board of Studies in Physics, KU, Wgl
Date: 24th Aug., 2016 & 5th June, 2017

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B.Sc. (Electronics Practicals) – I year Semester - II Paper – II:: Electronic Devices Lab

1. To draw V-I characteristics of Junction diode and determine the cut-in voltage, forward and reverse resistances.
2. Zener diode V-I Characteristics – Determination of Zener breakdown voltage.
3. Voltage regulator (line and load) using Zener diode.
4. BJT input and output characteristics (CE configuration) and determination of ‘h’ parameters.
5. FET – Characteristics and determination of FET parameters.
6. UJT characteristics – determination of intrinsic stand-off ratio.
7. UJT as relaxation oscillator.
- 8 Characteristics of LDR/Photo diode/Photo transistor/Solar cell.

Note: Student has to perform minimum of six experiments.

Reference Books:

- 1) Lab manual for Electronic Devices and Circuits – 4th Edition. By David A Bell - PHI





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