

**KURUKSHETRA UNIVERSITY KURUKSHETRA**  
**Course: B.Sc. (Hons) IT**  
**Semester-III**

**Paper Code: BSIT-301**

**Nomenclature: -Circuit Analysis & Digital Electronics-II**

**Max. Marks: 40+10\***

**Time: 3hrs.**

**Unit-I**

**Network Theorems-I:** Kirchhofs Voltage Law, Kirchhofs Current Law, Mesh Analysis, Nodal Analysis, Source Transformation Technique, Star-Delta Transformation, Superposition Theorem, Thevenin's Theorem.

**Unit-II**

**Network Theorems-II:** Norton's Theorem, Reciprocity Theorem, Compensation Theorem, Maximum Power Transfer Theorem, Duals and Duality, Tellegen's Theorem, Millman's Theorem.

**Unit-III**

**Combinational Logic Design:** Combinational Circuit design procedure, Half adder, full adder, half subtractor, full subtractor, parallel binary adder, 2'S complement adder/ subtractor, multiplexer and demultiplexer, Decoder, Encoder, Code Converter.

**Unit-IV**

**Sequential Circuits:** 1 Bit memory cell, RS Flip-Flop, Clocked RS FF, JK-FF, Race around condition, MASTER SLAVE JK T-FF, D-FF, Excitation table of Flip Flop, Conversion of Flip Flops. Applications of Flip Flops (Idea Only).

**Reference Books:**

1. Modern Digital Electronics by R.P. Jain.
2. Circuits and Networks by A. Sudhakar, Shyammoan
3. Network Analysis, Publication Khanna By G.K. Mithal
4. Network Analysis, Publication Pearson India By M.E. Van Valkenburg

**Note:**

1. Syllabus in each Theory Paper is divided in 4 units.
  - I. A Student is required to attempt 5 questions in all.
  - II. Question No 1 is compulsory, consisting of short answer type questions based on all the 4 units.
  - III. Two questions will be set from each unit. A student is required to attempt one question from each unit.
  - IV. All questions carry equal marks.
2. Use of simple calculator is permissible.
3. Instructions should be imparted using SI system of units. Familiarity with CGS system of units should also be ensured.
4. Distribution of Marks: 40+10.
  - \* Each theory question paper will be of 40 marks of 3 hours duration and 10 marks in each theory paper are to be awarded through internal assessment in each semester.
5. Work load – 3 periods per week per theory paper