B. Sc. (IT) Part I Semester-II
Paper I
Fundamentals of Digital Electronics

Unit – I

Data and Information: Features of Digital Systems, Number Systems: Decimal, Binary, Octal, Hexadecimal & their inter conversions, Representation of Data: Signed Magnitude, one's complement & two's complement, Binary Arithmetic, Fixed point representation and Floating point representation of numbers.

Codes: BCD, XS-3, Gray code, hamming code, alphanumeric codes (ASCII, EBCDIC, UNICODE), Error detecting and error correcting codes.

Unit- II

Boolean Algebra: Basic gates (AND, OR, NOT gates), Universal gates (NAND and NOR gates), other gates (XOR, XNOR gates). Boolean identities, De Morgan Laws. Karnaugh maps: SOP and POS forms, Quine McClusky method.

Unit –III

Combinational Circuits: Half adder, full adder, code converters, combinational circuit design, Multiplexers and demultiplexers, encoders, decoders, Combinational design using mux and demux.

Sequential Circuit Design: Flip flops (RS, Clocked RS, D, JK, JK Master Slave, T, Counters, Shift registers and their types, Counters: Synchronous and Asynchronous counters.

Unit- IV

Computers: Basic Organization, Memory: ROM, RAM, PROM, EPROM, EEPROM, Secondary Memory: Hard Disk & optical Disk, Cache Memory, I/O devices