

Paper Code: BCA - 106
Paper: Digital electronics
Paper Id 20106
Pre-requisite :

L	T/P	C
3	1	4

- Physics

Aim

- To understand various digital systems and their applications.

Objectives

- To learn about the design principles of different digital electronic circuits
- To study the applications of above circuits

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT-I

Logic gates NOT , AND, OR, Universal gates- NAND , NOR. EX-OR and EX-NOR gates.

Diode and Transistor as a switch

Logic Families-RTL,DTL,TTL,ECL,CMOS – (**Main features only - without details of circuit connections and working**). Definition of- current and voltage parameters, noise margin, Fan-in, Fan-out

Boolean Algebra

Basics Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps.[T1,T2,T3] **[No. of Hrs: 11]**

UNIT-II

Review of various number systems (Binary, Octal, Hexadecimal), Definition of BCD , Gray codes and Excess – 3 codes and their application (**without design of code convertors**)

Parity generation and Checking.

Arithmetic Circuits

Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and divider.

Combinational Circuits

Multiplexers, De-Multiplexers, decoders, encoders,.[T1,T2,R3] **[No. of Hrs: 11]**

UNIT-III

Flip-flops

S-R, D, J-K, T, Clocked Flip-flop, Race around condition, Master slave Flip-Flop, Realisation of one flip-flop using other flip-flop.

Shift Registers

Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out, Bi-directional shift register. [T1,T2,R3] **[No. of Hrs: 11]**

UNIT-IV

Counters

Ripple counter, Synchronous Counter, Modulo Counters, Ring Counter, Twisted Ring