

**JYOTI NIVAS COLLEGE AUTONOMOUS  
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

**Programme: B.C.A**

**Semester: I**

**DIGITAL ELECTRONICS**

**Course Code: 18BCAIT2**

**No. of Hours: 60**

**COURSE OBJECTIVES:**

- To understand number representation and conversion between different representation in digital electronic circuits.
- To analyze logic processes and implement logical operations using combinational logic circuits and Sequential Logic circuits.
- To provide a theoretical & practical introduction to microprocessors assembly language programming techniques, design of hardware interfacing circuits and microprocessor system design considerations.

**LEARNING OUTCOMES:**

- Develop digital logic circuits and to apply in real time applications.
- Analyze, design and implement combinational logic circuits.
- Analyze, design and implement sequential logic circuits.
- Write assembly language program for microprocessors

**UNIT I: DIGITAL LOGIC**

**12 HRS**

Digital signals-Basic gates-NOT, OR, AND. Universal gates- NAND and NOR. Number systems-Binary, Decimal, Octal, Hexadecimal-conversions-Codes-ASCII, Gray Code, Excess 3 code-arithmetic circuits-Half adder, Half subtractor, Full adder-Boolean algebra- Laws and rules-De Morgan's theorem-Simplification of Boolean algebra using rules and laws- Karnaugh map-Simplification of 3 and 4 variable Boolean expressions-Don't care conditions.

**UNIT II: LOGICAL CIRCUITS**

**14 HRS**

Combinational logic and sequential logic-multiplexer-4: 1,8;1,16:1 multiplexer (IC 74151)-pin diagram-Demultiplexer-1; 4,1;8, 1:16 demultiplexer-pin diagram-Flip flops-Clocked RS flip flop –JK flip flop (using NAND gates)-truth table, timing diagram-Registers-Shift registers-4 bit serial in serial out- serial in parallel out-parallel in serial out-parallel in parallel out-counters-asynchronous and synchronous-4 bit binary counter(synchronous and asynchronous) - logic diagram-truth table-timing diagram.

**UNIT III: INTRODUCTION AND ARCHITECTURE OF 8085**

**12 HRS**

Block diagram of a microcomputer and microprocessor-Terminology-hardware, software, Firmware, Compiler, Interpreter, assembler-Languages-Machine language, assembly level, High level language-Evolution of microprocessor-applications-mention only-features of 8085-memory addressing capacity-operating frequency-buses-Architecture –functional block diagram of 8085-explanation of each block-pin diagram of IC 8085-classification of pins according to functions.

**UNIT IV: INSTRUCTION SET OF 8085****12 HRS**

Instruction format-One byte, two byte, three byte- Addressing modes-Description with example-8085 status flags- Explanation-instruction classification-data transfer- Arithmetic-logical-branching-conditional and unconditional-machine control-Stack-stack operation with PUSH and POP instruction.

**UNIT V: INTERRUPTS AND PROGRAMMING OF 8085****10 HRS**

Interrupt signals - Maskable - non maskable interrupts - SIM and RIM instructions- bit pattern-explanation - Instruction cycle-machine cycle -T states- **Time delay- Delay using single register - loop within a loop technique - simple programs – addition – subtraction - and multiplication.**

**REFERENCES:**

1. Microprocessor Architecture, Programming and Applications with 8085.By Ramesh .S. Gaonker-Wiley Eastern Limited-IV Edition-1998.
2. Fundamentals Of Microprocessors and Microcomputers. Ram- DhanpatRai Publications- 1995.
3. Digital fundamentals.Floyd and Jain –Dorling Kindersley publications-2006.
4. Introduction to Microprocessors.Aditya .P. Mathur-TMH- III<sup>rd</sup> Edition.
5. Modern Digital Electronics. R.P Jain- TMH-II<sup>nd</sup> Edition
6. Digital Logic and Computer design: M.Morris Mano-PHI New Edition-2002.
7. Digital systems –Principles and applications – Ronald J.Tocci.NealS.Widmer -PHI 8<sup>th</sup> Edition-2005
8. Digital Principles and applications:Malvino and Leach –TMH 5<sup>th</sup> Edition-2004.