

Course Plan- Digital Electronics- 4th sem.

CO1: Explain the working principles and V–I characteristics of semiconductor and analyze their applications.

CO2: Design and analyze rectifier and regulator circuits using diodes, Zener diodes, and IC-based voltage regulators.

CO3: Describe the characteristics and parameters of operational amplifiers and their application.

CO4: Explain the working principles of timing circuits and oscillators, and design waveform generators.

CO5: Analyze and implement digital electronic circuits and architecture of microprocessors and microcontrollers.

CO6: Design a simple communication system model incorporating modulation techniques

S. No.	Lecture No.	Topic to be Discussed	CO	Objective of Unit	Outcome of Lecture and CO	Date
UNIT-1(8)	1	Introduction to Data Mining- Fundamental concepts: Number systems and codes	1	To acquaint the students with the Number system, different codes and their representation as well conversion, Boolean algebra	Explain the working principles and V–I characteristics of semiconductor and analyze their applications.	28/8/26
	2	Basic logic Gates and Boolean algebra	1			29/8/26
	3	Sign & magnitude representation, Fixed point representation,	1			01/9/26
	4	Complement notation, various codes	1			05/9/26
	5	Arithmetic in different codes & their inter conversion. Features of logic algebra	1			06/9/26
	6	postulates of Boolean algebra	1			08/9/26
	7	Theorems of Boolean algebra.	1			12/9/26
UNIT-2(8)	8	Principle of Duality - Boolean expression -Minimization of Boolean expressions	2	To acquaint the students with the concepts and objectives of Predictive Modeling	Design and analyze rectifier and regulator circuits using diodes, Zener diodes, and IC-based voltage regulators.	13/9/26
	9	Minterm – Maxterm	2			15/9/26
	10	Sum of Products (SOP) – Product of Sums (POS)	2			18/9/26
	11	Karnaugh map Minimization	2			19/9/26

	12	Don't care conditions	2			20/9/26
	13	Quine - McCluskey method of minimization	2			22/9/26
UNIT-3 (9)	14	TTL logic gate characteristics. Theory & operation of TTL NAND gate circuitry	3	To make the students understand and Realization the logic families circuitry and working	Acquire knowledge about various logic families and analyze basic logic gate circuits of these families.	28/9/24
	15	Open collector TTL	3			03/10/24
	16	Three state output logic	3			05/10/24
	17	TTL subfamilies	3			09/10/24
	18	MOS& CMOS logic families	3			10/10/24
	19	Realization of logic gates in RTL, DTL	3			12/10/24
	20	Realization of logic gates in ECL, C-MOS	3			16/10/24
	21	MOSFET	3			17/10/24
UNIT-4(10)	22	Combinational logic circuit design	3	To make the students understand various logic circuit design	Design various combinational and sequential circuits	24/10/24
	23	Adder: Half and Full				26/10/24
	24	Subtractor : Half and Full	3			30/10/24
	25	BCD adder	3			31/10/24
	26	encoder	3			02/11/24
	27	decoder	3			06/11/24
	28	BCD to 7-segment decoder,	3			07/11/24
	29	Multiplexer				09/11/24
	30	Demultiplexer	3			14/11/24
UNIT-5(8)	31	Latches, Flip-flops	4	To acquaint the students with various flip flips design and Sequential circuits design	Design various combinational and sequential circuits	20/11/24
	32	Flip-flops - SR, JK	4			21/11/24
	33	Flip-flops – D, T	4			24/11/24
	34	Master-Slave Characteristic table	4			28/11/24

	35	Equation, counters and their design	4	methodology		30/11/24
	36	Synchronous counters – Synchronous Up/Down counters –	4			04/12/24
	37	Programmable counters – State table and state transition diagram	4			05/12/24
	38	Sequential circuits design methodology. Registers –shift registers.	4			07/12/24
Reference Books	1. Digital Electronics by S.Salivahan 2. Digital Fundamentals by Floyd 3. Digital Design by Morris Mano					

Course Plan- Digital Electronics- Section- B

S. No.	Lecture No.	Topic to be Discussed	CO	Objective of Unit	Outcome of Lecture and CO	Date
UNIT-1(8)	1	IntroductiontoDataMining-Fundamental concepts: Number systems and codes	1	To acquaint the students with the Number system, different codes and their representation as well conversion, Boolean algebra	Apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions and knowledge about various logic gates	28/8/24
	2	Basic logic Gates and Boolean algebr	1			29/8/24
	3	Sign & magnitude representation, Fixed point representation,	1			04/9/24
	4	Complement notation, various codes	1			05/9/24
	5	Arithmetic in different codes & their inter conversion. Features of logic algebra	1			09/9/24
	6	postulates of Boolean algebra	1			11/9/24
	7	Theorems of Boolean algebra.	1			16/9/24
	8	UNIT TEST				02/9/24
UNIT-2(8)	9	Principle of Duality - Boolean expression -Minimization of Boolean expressions	2	To acquaint the students with the concepts and objectives of PredictiveModeling	Develop K-maps and apply Quine Mc Cluskey’s method to minimize and optimize logic functions up to 4 variables	18/9/24
	10	Minterm – Maxterm	2			19/9/24
	11	Sum of Products (SOP) – Product of Sums (POS)	2			24/9/24
	12	Karnaugh map Minimization	2			25/9/24

	13	Don't care conditions	2			26/9/24
	14	Quine - McCluskey method of minimization	2			30/9/24
	15	UNIT TEST				03/10/24
UNIT-3 (9)	16	TTL logic gate characteristics. Theory & operation of TTL NAND gate circuitry	3	To make the students understand and Realization the logic families circuitry and working	Acquire knowledge about various logic families and analyze basic logic gate circuits of these families.	07/10/24
	17	Open collector TTL	3			09/10/24
	18	Three state output logic	3			10/10/24
	19	TTL subfamilies	3			14/10/24
	20	MOS& CMOS logic families	3			16/10/24
	21	Realization of logic gates in RTL, DTL	3			17/10/24
	22	Realization of logic gates in ECL, C-MOS	3			21/10/24
	24	MOSFET	3			30/10/24
	24	UNIT TEST				19/10/24
UNIT-4(10)	25	Combinational logic circuit design	3	To make the students understand various logic circuit design	Design various combinational and sequential circuits	31/10/24
	26	Adder: Half and Full				04/11/24
	27	Subtractor : Half and Full	3			05/11/24
	28	BCD adder	3			06/11/24
	29	encoder	3			11/11/24
	30	decoder	3			14/11/24
	31	BCD to 7-segment decoder,	3			18/11/24
	32	Multiplexer				20/11/24
	33	Demultiplexer	3			21/11/24
	34	UNIT TEST				16/11/24
UNIT-5(8)	35	Latches, Flip-flops	4	To acquaint the students with various flip flips design and Sequential circuits design	Design various combinational and sequential circuits	25/11/24
	36	Flip-flops - SR, JK	4			28/11/24
	37	Flip-flops – D, T	4			02/12/24
	38	Master-Slave Characteristic table	4			04/12/24

	39	Equation, counters and their design	4	methodology		05/12/24
	40	Synchronous counters – Synchronous Up/Down counters –	4			09/12/24
	41	Programmable counters – State table and state transition diagram	4			11/12/24
	42	Sequential circuits design methodology. Registers –shift registers.	4			12/12/24
	43	UNIT TEST				16/12/24
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