DRONACHARYA
Group of Institutions

LESSON PLAN FOR EVEN SEMESTER SESSION 2022-23

Subject: Digital Electronics (KOE049)

Unit	Lecture No.	Topics	Text Book/ Reference Book - article.	Web link of the refernce material/video lectures	Assignment & tutorial
1	1	**Digital System And Binary Numbers**: Number System and its arithmetic	Text1 Chapter-1 ,1.1,1.2.	https://archive.nptel.ac.in/courses/108/105/108105132/	Assignment#1 Tutorial#1 /Reflection Quiz
	2	Signed binary numbers,	Text1 Cahpter-1,1.6	https://www.youtube.com/watch?v=XZIUZ18Z1Ec&t=115s	
	3	Logic simplification and combinational logic design:	Text1 Unit-1 ,1.9	https://archive.nptel.ac.in/courses/108/105/108105132/	
	4	Binary codes, code conversion,	Text1 Unit-1 ,1.3.1.4,1.5	https://www.youtube.com/watch?v=w_SvBrCuZpo	
	5	Binary codes, code conversion- Practice Examples	Text 1, End semester papers +Reflection Quiz	https://www.youtube.com/watch?v=08g1iGxroN8	
	6	Review of Boolean algebra and Demorgans theorem,	Text1 Chapter 2, 2.1-2.4	https://www.youtube.com/watch?v=KbDjYnevQPg	
	7	Boolean Algebra -Practice Examples	Text 1 Chapter 2 examples+end semester paper questions	Reflection Quiz 1 & 2 (Practice examples in the class)	
	8	SOP & POS forms, Canonical forms,	Text1 Chapter 2,2.6	https://www.youtube.com/watch?v=jOYovTtnTCM&t=745s	
	9	Karnaugh maps method up to five variable,	Text1 Chapter 3,3.1,3.2,3.3,3.4	https://www.youtube.com/watch?v=tuzSGbVI8iE	
	10	Don't care conditions, POS simplification,	Text1 Chapter 3,3.5, 3.6,	Practice Examples	
	11	K-Map Practice Examples-NAND and NOR implementation,	Text1 Chapter 3,3.7	https://www.csusm.edu/stemsc/handouts/project2_handouts/cs231_karnaugh_maps.pdf	
	12	Quine McClusky method (Tabular method).	Text1 Chapter 3,3.9	https://www.youtube.com/watch?v=ayuOKBxOmr8&t=196s https://www.youtube.com/watch?v=GNPgalNnldE	
	13	Combinational Logic: MSI devices like Magnitude comparator,	Text1 Chapter-4, 4.8	https://www.youtube.com/watch?v=6zBHQoXhozQ	torial#2
	14	Multiplexers, Demultiplexers,	Text1 Chapter-4, 4.11	https://www.youtube.com/watch?v=7G1i5PUgz3w	
	15	Decoders, Encoders.	Text1 Chapter-4, 4.9,4.10	https://www.youtube.com/watch?v=RcYb207V2QE	

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2	16	Multiplexed display, half and full adders,	Text1 Chapter-4, 4.4,4.5	https://www.youtube.com/watch?v=85XxQZqBNlg&t=516s	Assignment#2 Tu
	17	subtractors,	Text1 Chapter-4, 4.5,4.6	https://www.youtube.com/watch?v=YBY0k5mIQy0	
	18	serial and parallel adders,	Text1 Chapter-4, 4.5,4.6	https://www.youtube.com/watch?v=hQjRFrHXCDU	
	19	BCD adder	Text1 Chapter-4, 4.5,4.6	Reflection Quiz (Practice examples in the class)	
	20	Practice Examples	Reflection Quiz and Practice Examples	Assignment #2	
3	23	Sequential Logic And Its Applications: Storage elements: latches & flip flops,	Text1 Chapter5, 5.1.	https://www.youtube.com/watch?v=YEBVI73piU4	Assignment #3 Tutorial # 3
	24	Characteristic Equations of Flip Flops,	Text1 Chapter 5, 5.2		
	26	Flip Flop Conversion	Text1 Chapter5, 5.3,5.4	https://www.youtube.com/watch?v=1GAJBhjgv4A	
	27	Flip Flop Conversion	Text1 Chapter 5 , 5.4,5.5	https://www.youtube.com/watch?v=xSvy5WVc8tI	
	29	Shift Registers,	Text1 Chapter 6, 6.1.	https://www.youtube.com/watch?v=KcRjGlasDBk	
	30	Shift Registers,	Text1 Chapter 6 , 6.2	https://www.youtube.com/watch?v=ApILP5WPZeE&t=798s	
	32	Ripple Counters,	Text1 Chapter 6 ,6.3, 6.4	https://www.youtube.com/watch?v=eZbGuv1lsrE	
	34	Synchronous Counters, Other Counters:Johnson & Ring Counter.	Text1 Chapter 6 ,6.3, 6.4	https://www.youtube.com/watch?v=qRf_UxjsXNA	
	35	Counters- Practice Examples	Reflection Quiz and Practice Examples	Refernce Text available at --- https://www.javatpoint.com/counters-in-digital-	
4	29	Synchronous & Asynchronous Sequential Circuits: Analysis of clocked sequential circuits with state	Text1 Chapter 9, 9.1,9.2, 9.3	https://upscfever.com/upsc-fever/en/gatecse/en-gatecse-chp26.html	nment #4 Tutorial # 4
	30	Synchronous & Asynchronous Sequential Circuits: Analysis of clocked sequential circuits with state	Text1 Chapter 9, 9.1,9.2, 9.3		
	31	State reduction and assignments, Design procedure.	Text1 Chapter 9, 9.4	https://www.ee.ucl.ac.uk/~ademosth/E757/Topic3.pdf	
	32	Analysis procedure of Asynchronous sequential circuits, circuit with latches.	Text1 Chapter 9, 9.4,9.5	https://www.youtube.com/watch?v=Dyp1EDgyUhA	
	33	Analysis procedure of Asynchronous sequential circuits, circuit with latches.	Text1 Chapter 9, 9.4,9.5	https://www.youtube.com/watch?v=m-An4pZjhCA	
	34	Design procedure, Reduction of state and flow table,	Text1 Chapter 9, 9.4,9.5		

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	35	Design procedure, Reduction of state and flow table,	Text1 Chapter 9, 9.6	https://www.ee.ucl.ac.uk/~ademosth/E757/Topic6.pdf	Assign
	36	Race-free state assignment, Hazards	Text1 Chapter 9, 9.7	https://www.youtube.com/watch?v=DwK8mEjHnx0	
	37	Race-free state assignment, Hazards	Text1 Chapter 9, 9.7	https://web.stanford.edu/class/archive/ee/ee108a/ee108a.1082/reader/ch22to25.pdf	
5	38	Memory & Programmable Logic Devices: Digital Logic Families:	Text1 Chapter 10,10.1,10.2	https://engweb.eng.wayne.edu/~ad5781/ECECourses/ECE2610/LectureNotes/Lecture13.pdf	Assignment # 5 Tutorial # 5
	39	DTL, DCTL, TTL,	Text1 Chapter 10,10.3,10.4,10.5	https://india.oup.com/productPage/5591038/7421214/9780198061830	
	40	ECL & CMOS etc.,	Text1 Chapter 10,10.6,10.7	https://easyelectronics.co.in/classification-and-characteristics-of-logic-families/	
	41	Circuits of Logic Families, Interfacing of Digital Logic Families,	Text1 Chapter 10,10.7		
	42	Fan Out, Fan in, Noise Margin; RAM, ROM, PLA, PAL;	Text1 Chapter 7, 7.1,7.2,7.5,7.6,7.7	https://easyelectronics.co.in/classification-and-characteristics-of-logic-families/	
	43	Circuit Implementation using ROM, PLA and PAL	Text1 Chapter 7, 7.1,7.2,7.5,7.6,7.7		
	44	Circuit Implementation using ROM, PLA and PAL	Text1 Chapter 7, 7.1,7.2,7.5,7.6,7.7	https://nscpolteksby.ac.id/ebook/files/Ebook/Computer%20Engineering/Digital%20Design/Chapter%207%20-%20Memory%20and%20Program%20mable%20Logic.pdf	
	45	Circuit Implementation using ROM, PLA and PAL	Text1 Chapter 7, 7.1,7.2,7.5,7.6,7.7		

Text Book:

1. M. Morris Mano and M. D. Ciletti, "Digital Design", Pearson Education.(4th Edition)
2. Digital Circuits and Design, S. Salivahanan, Oxford University Press
3. David J. Comer, "Digital Logic & State Machine Design", Oxford University Press.
4. RP Jain, "Modern Digital Electronics", McGraw Hill Publication.
5. A. Anand Kumar, "Fundamental of Digital Circuits," PHI 4th edition, 2018.
6. D.V. Hall, "Digital Circuits and Systems," McGraw Hill, 1989.