Daffodil Polytechnic Institute, Institute Code: 50238

Lesson Plan – Academic

session: June to December 2024

Subject Teacher : Md. Badeuzzamal Sarker
Designation: Instructor
Subject Name: Digital Electronics-2
Subject Code: 26841
Semester: 4th
Technology: Computer Science Technology
Reference Book: RS & Hauqe Publication
E-learning Course link: https://dpi.df.daffodil.family/slides/digital-electronics-2-26841-366

Mark Distribution (for 150 Marks)			
Theory Marks		**Practical Marks**	
Midterm	20	PC	25
Class test	10	PF	25
Quiz test	10	-	-
Final	60	-	-
Total	**100**	**-**	**50**

Time Distribution (90min)			
	Particular	Time	
Greeting with students		**5 Min**	
Previous class review		**10 Min**	
Present class lecture		**60 Min**	
Feedback		**10 Min**	
Attendance		**5 Min**	

Subject Aims:

Diploma in Engineering Level students are required to acquire the knowledge and skill on concept of Digital counters , shift registers, memory, ADC, DAC, PLD, PLA, PAL, GAL, SAP-1 and 8085 microprocessor which are used in about all digital system and the foundation of advanced microprocessor, microcontroller and

Subject Outcome:

After completing the subject students will be able to:
Explain register and counter use memory. Describe ADC and DAC state programble logic devices. Describe simple computer. Explain program 8085 microprocessor.

After undergoing the subject, students will be able to:

- *Verify the operation of shift register.*
- *Verify the operation of binary counter.*
- *Verify the operation of ring and Johnson counter.*
- *Perform read & write operation of an EPROM.*
- *Verify the operation of DAC.*
- *Verify the operation of ADC.*
- *Observe the operation of programmable logic device (PLD).*
- *Test program to add two 8-bit numbers using 8085 microprocessor.*
- *Test program to subtract two 8-bit numbers using 8085 microprocessor.*
- *Test program to multiply two 8-bit numbers using 8085 microprocessor.*

Marks	**Grade Point**	**Letter Grade**	***Marks***	**Grade Point**	Letter Grade
80>	4.00	A+	55-59	2.75	B
75-79	3.75	A	50-54	2.50	C+
70-74	3.50	A-	45-49	2.25	C
65-69	3.25	B+	40-44	2.00	D
60-64	3.00	B	0-39	0.00	F

Lecture	Chapter/ Exam	Learning Area	Learning Outcome	Class/Lab Supporting Equipment's
1	REGISTER	1.1 Define register and shift register. 1.2 Mention types of shift registers. 1.3 Describe the operation of buffer register.	1. Our student can Understand different typesof Register	https://www.youtube.com/watch?v=bAQfPQgKCHs
2		1.4 Explain the operation of SISO, SIPO, PISO and PIPO shift register with logic diagram. 1.5 Describe the operation of left shift, right shift and universal shift register with logic diagram.		
3		1.6 List the different types of common shift register IC chips. 1.7 Mention the uses of shift registers.		
4	Lab-1	VERIFY THE OPERATION OF SHIFT REGISTER.	1. DC power Supply 2. Function generator 3. Oscilloscope 4. Digital Electronics Trainer 5. Power project board/ bread board 6. 8085 Microprocessor Trainar. 7. 8085 Simulatore program. 8. IC No: 74164, 74165, 7494, 7495, 7490, 7493, 74181, 74191, ADC0804,DAC0800, 74189, 2732. 9. 7-segment Display Module, 555IC 10. Soldering Iron 11. Resin, Soldering lead, Soldering trip, Fixable wire, Wire Brush,	
5	COUNTER	2.1 Define binary counter, modulus of counter and divided by N counter. 2.2 Classify counter.	1. Student know about Counter Circuits.	https://www.youtube.com/watch?v=iaIu5SYmWVM
6		2.3 Differentiate between asynchronous and synchronous counter. 2.4 Describe the operation of 4-bit binary up, binary down, and binary Up-Down counter with timing diagram.		
7		2.5 Describe the operation of MOD-10 counter. 2.6 Explain the operation of ring & Johnson counter with logic circuit and timing diagram. 2.7 Describe the operation of digital clock.		
8	Lab-2	VERIFY THE OPERATION OF BINARY COUNTER.		At the same of before.
9	**Quiz Test-1**	**Lecture: 1-8**		
10	MEMORY	3.1 Define memory. 3.2 Classify memory. 3.3 Describe ROM, PROM, EPROM and EEPROM. 3.4 Describe the logic circuit of	1. Our student about knows	https://www.youtube.com/watch?v=sWAsRA-9DgQ

		RAM and Flash RAM.	MEMORY	
11		3.5 Explain the architecture of static RAM (SRAM) and dynamic RAM (DRAM). 3.6 Describe the read and write operation of memory. 3.7 Differentiate between RAM and ROM. 3.8 Distinguish between SRAM and DRAM.		
12	**Class Test-1**	**Lecture: 1-11**		
Assignment-1		**Assignment on lecture: 1-11**	To build up their confidence level & increase creativity on chapter: 1-3	**Must be submitted within the next two lecture.**
13	Lab-3	VERIFY THE OPERATION OF RING AND JOHNSON COUNTER.		At the same of before.
14	ANALOG TO DIGITAL CONVERTER (ADC) AND DIGITAL TO ANALOG CONVERTER (DAC)	4.1 Define ADC and DAC. 4.2 Mention the steps to convert analog signal to digital signal. 4.3 Describe the operation of sample and hold circuit.	1. Our student to know about difference motion in our life. 2. There can Classify and explain of motion.	https://www.youtube.com/watch?v=yKzAofVy15s
15		4.4 Mention the types of ADC and DAC. 4.5 Explain the conversion process of 3-bit parallel ADC. 4.6 Describe the operation of successive approximation and dual slope ADC.		
16		4.7 Discuss the operation of a binary weighted and R-2R ladder DAC. 4.8 State resolution, percentage of resolution, accuracy of ADC and DAC. 4.9 List the ICs used as ADC and DAC.		
17	Lab-4	PERFORM READ & WRITE OPERATION OF AN EPROM.		At the same of before.
18	**Quiz Test-2**	**Lecture: 9-16**		
19	PROGRAMMABLE LOGIC DEVICES (PLDs)	5.1 Defines PLD, AND array and OR Array. 5.2 Mention the advantages of PLD. 5.3 Classify PLD. 5.4 Describe the logic structure of PLA, PAL and GAL. 5.5 Interpret standard PAL and GAL numbering.	Gather a good knowledge about	https://www.youtube.com/watch?v=3Wy2IhbfNC0
20		5.6 Describe the programming process of SPLD. 5.7 Discuss the block diagram of CPLD. 5.8 Discuss the block diagram of FPGA. 5.9 List the Application of PLDs,		

		CPLD and FPGA.		
21	**Class Test-2**	**Lecture: 12-19**		
Assignment-2		**Assignment on lecture: 13-19**	To build up their confidence level &increase creativity on chapter: 4-5	**Must be submitted within the next two lecture.**
22	**Review Class**			
23	**Model Test Chapter: 1-5**		Our students will beready for exam.	Pen, pencil, eraser, calculator
Mid Term Exam				
24	Lab-5	VERIFY THE OPERATION OF DAC.		At the same of before.
25	SIMPLE AS POSSIBLE (SAP)-1 COMPUTER	6.1 State the meaning of SAP. 6.2 Describe the function of each stage of SAP-1 with block diagram. 6.3 State the function of control signals. 6.4 Explain each instruction of SAP-1 with binary code.	The end of the lesion our students able to Basic knowledge of 8085 Microprocessor	https://www.youtube.com/watch?v=3Wy2IhbfNC0
26		6.5 Write simple program using SAP-1 Instruction and show the instruction in memory with mentioning memory address. 6.6 State the concept of machine cycle, fetch cycle, execution cycle and Instruction cycle. 6.7 Describe the timing diagram of LDA, ADD and SUB Instructions. 6.8 Describe the methods of micro programming.		
27	Lab-6	VERIFY THE OPERATION OF ADC.		At the same of before.
28	FEATURES OF MICROPROCESSOR	7.1. Define Microprocessor and microcomputer. 7.2. List 8-bit, 16-bit, 32 bit and 64-bit Microprocessors. 7.3. Describe the architecture of 8085 microprocessor.	The end of the lesion our students able to Basic knowledge of 8085 Microprocessor	https://www.youtube.com/watch?v=uc8q6xBqG4U
29		7.4. Describe the pin diagram and function of each pin of Intel 8085 microprocessors. 7.5. Describe the software model of Intel 8085 microprocessors.		
30	**Quiz Test-3**	**Lecture: 17 -30**		
31	Lab-7	PERFORM THE WRITE OPERATION OF PLD		At the same of before.
Assignment - 3		**Assignment on lecture: 24-31**	To build up their confidence level & increase creativity on chapter: 6-7	**Must be submitted within thenext two lecture.**
32	PROGRAM	8.1. Define assembly language and		https://www.youtube.com/

	MING OF 8085 MICROPROCESSORS	assembler. 8.2. Describe the fields of assembly language program. 8.3. Define instruction and instruction set.	The end of the lesson our student understand gravity and gravitation gravity and gravitation gravity and gravitation in our world.	watch?v=vVJpc
33		8.4. Describe the instruction set of 8085 microprocessors. 8.5. Explain the addressing modes of Intel 8085 microprocessors. 8.6. Write programs using 8085 instructions.		
34	**Class Test-3**	**Lecture: 24-34**		
35	Lab-8	TEST PROGRAM TO PERFORM 8-BIT ARITHMETIC OPERATION OF 8085 MICROPROCESSOR.		At the same of before.
36	8085 MICROPROCESSOR BASED SYSTEM	9.1 Define microprocessor based system. 9.2 Describe the block diagram of a microprocessor based system. 9.3 Define Bus multiplexing.	our student understand gravity and gravitation in our world.	https://www.youtube.com/watch?v=tthQJKIGZSY
37		9.4 Explain the process of multiplexing bus using latch. 9.5 Describe the technique of generate control signals. 9.6 Differentiate between memories mapped I/O and standard I/O.		
38		9.7 Describe the block diagram of 8255 programmable peripheral Interface (PPI). 9.8 Discuss the function of Programmable Interval Timer.		
39	**Quiz Test-4**	**Lecture: 32 -38**		
40	Lab-9	TEST PROGRAM TO PERFORM SELECTION/BRINCHING OPERATION OF 8085 MICROPROCESSOR.		At the same of before.
41	**Class Test-4**	**Lecture: 36 -38**		
Assignment - 4		**Assignment on lecture: 32-39**	To build up their confidence level &increase creativity on chapter: 8-9	**Must be submitted within the next two lecture.**
42	Review Class			
43	Review Class			
44	**Model Test Chapter: 6-9**		Our students will beready for exam.	Pen, pencil, eraser, calculator
45	**Model Test Chapter: All**		Our students will beready for exam.	Pen, pencil, eraser, calculator
Final Term Exam				