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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)
B.E./B.Tech/B.Arch (FullTime) -END SEMESTER EXAMINATIONS, APRIL/ MAY 2024
BIMEDICAL ENGINEERING

Sixth Semester

EC5551–Microprocessors and Microcontrollers

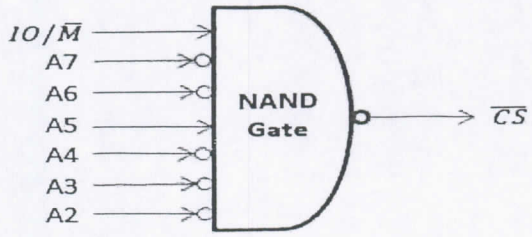
(Regulation 2019)

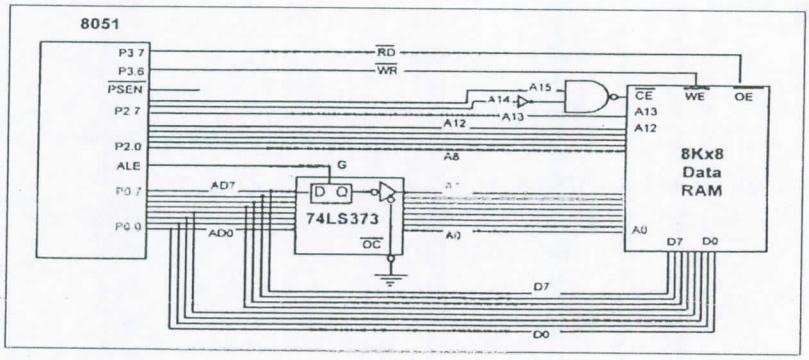
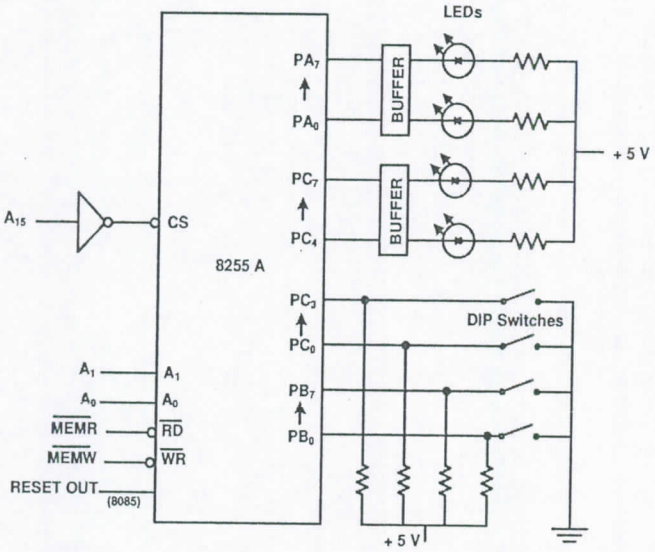
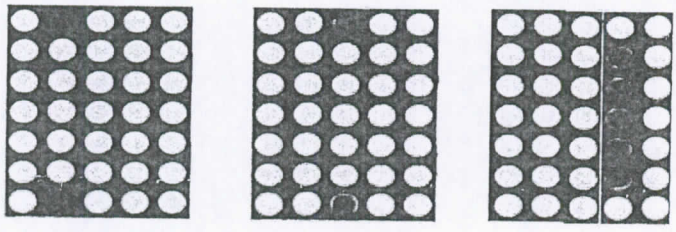
Time Duration: 3hrs Max.Marks:100

CO1	Ability to relate any architecture and assembly language for a processor.
CO2	Ability to comprehend the architectural and pipelining concepts for Microprocessors.
CO3	Ability to design and deploy the interfacing peripherals in realtime scenario.
CO4	Ability to discriminate different microprocessors, microcontrollers and its special function registers.
CO5	Ability to design, develop and troubleshoot microcontroller based system.

BL–Bloom's Taxonomy Levels
(**L1**-Remembering, **L2**-Understanding, **L3**-Applying, **L4**-Analyzing, **L5**-Evaluating, **L6**-Creating)

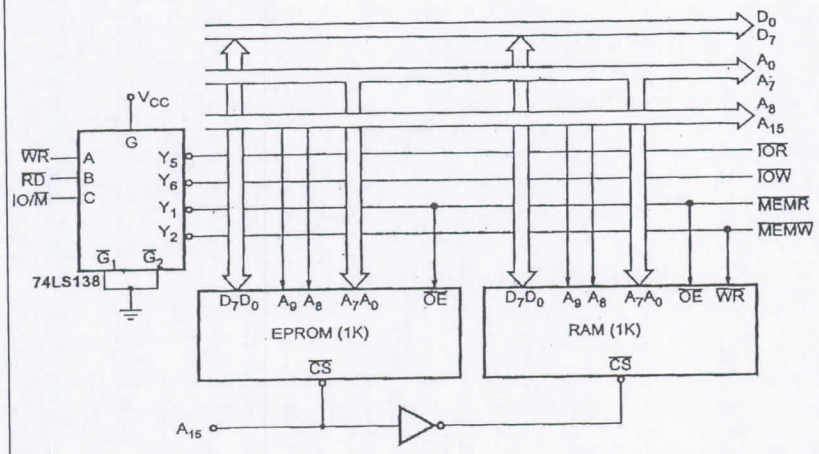
PART-A(10x2=20Marks)
(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	Write an assembly level program in 8085 microprocessor to find whether the given number in B register is divisible by 2. Assign D=1 if divisible, else D=0.	2	CO1	L3
2	If the following schematic has to enable a memory chip by 8085 microprocessor, fill in the blank space in the boxes, provided below with appropriate values.  IO/M̄ | A7 | A6 | A5 | A4 | A3 | A2 | | | | | |	2	CO1	L4

3	In the circuit given below, what is the role and the use of IC 74LS373. 	2	C02	L4
4	What is the control word to be written in control register of 8255, so that the system will work properly? 	2	C02	L3
5	Write the operation in steps of PUSH instruction in 8051. Assume relevant necessary details.	2	C03	L2
6	List the special function registers available in 8051, which are involved in interrupt processing.	2	C03	L1
7	Find out the row and column values for the third dot matrix display 	2	C04	L4
8	What is the use of PWM in DC motor speed control?	2	C04	L2
9	What is the advantage of 16 bit Thumb instruction in ARM processor?	2	C05	L2
10	Write the control Program Status Register format in ARM Processor.	2	C05	L1

PART-B (5x13=65Marks)

Q.No.	Questions	Marks	CO	BL
11(a)(i)	With a neat diagram explain, the maximum mode operation of 8086 Microprocessor.	7	CO1	L1
(ii)	For the given memory interfacing schematic, find out the starting and ending address of EPROM and RAM.	6	CO1	L3



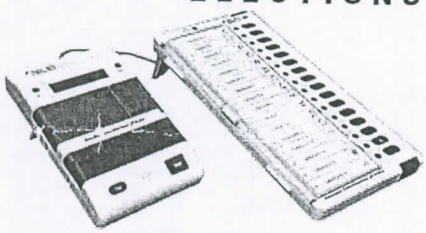
	Starting Address	Ending Address
EPROM		
RAM		

OR

11 (b)	Given the content of A=34H, and PC=5678H. Draw the timing diagram for the 8085 instruction LDA 2255, Assume all other required and relevant details. Opcode for LDA is " 3A".	13	CO1	L2
12 (a)	With a neat diagram, explain the working of the programmable Interface IC 8254.	13	CO2	L1
	OR			
12 (b)	With a neat diagram, explain the working of the interfacing IC 8255.	13	CO2	L1
13 (a)	Write a program to transmit the word 'BIOMEDICAL" by serial communication from 8051 microcontroller to a standard PC at 9600 baud rate. Draw the interfacing diagram.	13	CO3	L4
	OR			
13(b)	Assuming XTAL = 11.0592 MHz, write a program in 8051 to	13	CO3	L4

14 (a)	With a neat diagram, explain the stepper motor and its interfacing method with 8051 microcontroller. Write a program to rotate in clockwise direction for the same.	**13**	CO4	L4
	OR			
14 (b)	Write a program to generate rectangular wave using 8051 interfaced with DAC. Draw the interfacing diagram with flow chart.	**13**	CO4	L4
15 (a)	With a neat diagram, explain the ARM core data flow model and its associate registers, also write about the different processor modes available in ARM processor.	**13**	CO5	L1
	OR			
15 (b)	Briefly, explain the ARM and Thumb instruction set available in ARM processor.	**13**	CO5	L1

PART-C(1x 15=15Marks)

Q.No	Questions	Marks	CO	BL
16.	Design a microcontroller based Electronic voting machine. The system should have control unit and ballot unit as shown below. The required features are, it should be battery operated, it should have six seven segment display in the control unit to display the individual total vote count, the ballot unit should have 8 candidate buttons to contest vote and the casted vote has to be stored and retrieved separately in an nonvolatile memory available in control unit. Give a neat working schematic and also explain its working with a flowchart. Assume all other required and relevant details. **ELECTIONS**  **Municipal**	**15**	CO5	L6