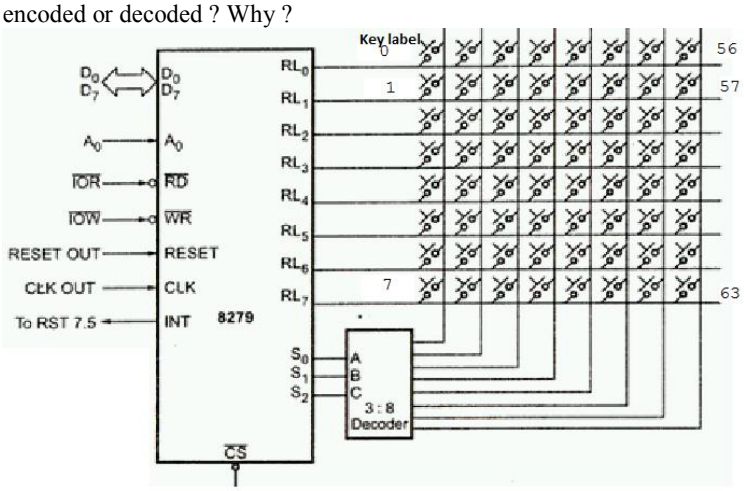
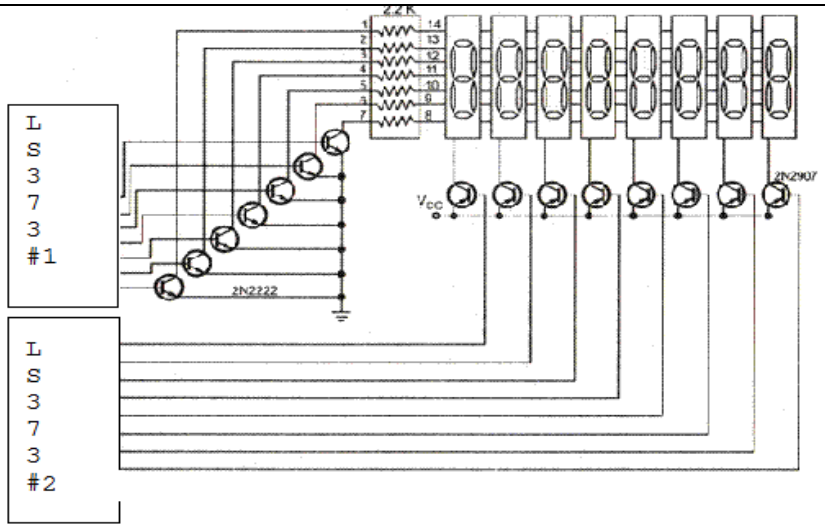
DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
THIRD SESSIONAL

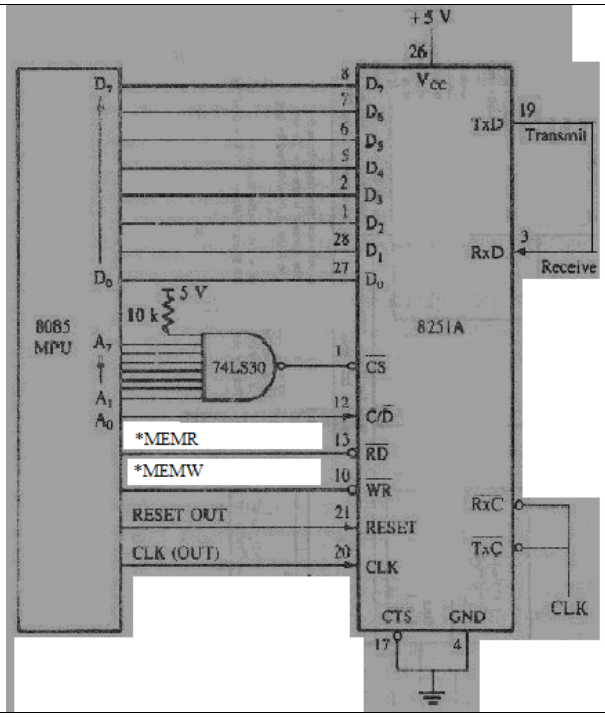
SUBJECT CODE : (IT403) SUBJECT NAME : Microprocessor Architecture Programming & Interfacing

Examination	**: B.TECH - Semester - IV**	**Seat No.**	**:**
Date	**: 09/04/2016**	**Day**	**: WEDNESDAY**
Time	**: 11:00 to 12:15**	**Max. Marks**	**: 36**

INSTRUCTIONS:

1. **Figures to the right indicate maximum marks for that question.**
2. **The symbols used carry their usual meanings.**
3. **Assume suitable data, if required & mention them clearly.**
4. **Draw neat sketches wherever necessary.**

Q.1	**A. State true/false and justify (no marks without justification).**		
	(a)	**While executing an instruction which refers R0 to R7, 8051 will always refer BANK0.**	**[2]**
	(b)	**The address of the R4 is bank 1 is 14H in 8051.**	**[2]**
	(c)	**In 8051, all internal interrupts are non-maskable and external interrupts are maskable.**	**[2]**
	(d)	Without any I/O interfacing, it is not possible to have one bit input/output port in 8085.	**[2]**
	(e)	It is compulsory to initialize SP after RESET, if register bank 1 is used in the program.	**[2]**
	(f)	If both RS0 and RS1 status bits are 1 then MOV A,18H and MOV A,R0 will do the identical operation in 8051.	**[2]**
Q.2	**Answer any two**		
	(a)	When keys labeled '16' to '23' are pressed (see figure below), write down the 8-bit code generated by 8279. Explain the code generation process by 8279. For following circuit, 8279 is to be programmed in which mode – encoded or decoded ? Why ? 	**[6]**
	(b)	 The above time multiplexed 8 seven segment display circuit is interfaced with 8085. Assume when you output 8-bit data as 00 to 0F on port #1 (LS373 #1 which selects the 8 segments) and if digit is selected, it will display '0' to 'F' respectively. Digit can be selected by making corresponding line low on port #2 (LS373#2). Write a program to display continuously '0' to '7' on above 8 seven segment display. Assume port#1 address 80H and port#2 address as 81H (IO mapped IO).	**[6]**

	(c)	 Identify the port addresses. Initialise 8251 for 1200 baud rate, 8 data bits, no parity, one stop bit. TxD and RxD are shorted, as shown in the figure. Write a program to test transmit and receive section of the 8251 is working fine or not. Assume CLK frequency is baudx16.	[6]
Q.3	**(a)**	**How many interrupts are there in 8051? Name them. Explain the characteristics in terms of maskability, vectoring and priority. Name the SFRs used for these purpose.**	**[6]**
	(b)	**Based on the scanned Matrix keyboard principle, draw the neat circuit diagram to interface 16 keys keyboard arranged in 4x4 key matrix keyboard using PC port of 8255 and explain the working of the circuit. If you do not use scanned matrix keyboard principle, how many IO lines required ?**	**[3]**
	(c)	**8-bit DAC is connected to 8-bit latch whose port address is 1800H. DAC is configured for 0 to 10 V output. Write a program to generate 5 Volt Square Wave of 1Khz at the output. Necessary Delay routine is available at 1900H.**	**[3]**
		OR	
Q.3	**(a)**	**How 128 bytes internal RAM is organized in 8051? Explain in detail.**	**[3]**
	(b)	**Interface the 64 Kbytes external memory circuit which will allow the program and data both reside in the same memory in 8051.**	**[3]**
	(c)	**What is the problem when 12 bit DAC is interfaced with 8-bit processor? Suggest the solution with neat circuit diagram.**	**[3]**
	(d)	**Draw the one wait state generator circuit which will add one wait state for all IO address space for 8085.**	**[3]**