University of Mumbai

Examinations Summer 2022

Time: 2 hour 30 minutes Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	8051 series has how many 16 bit registers?
Option A:	0
Option B:	1
Option C:	2
Option D:	3
2.	In 8051, after RETI instruction is executed then the pointer will move to which location in the program?
Option A:	next interrupt of the interrupt vector table
Option B:	immediate next instruction where interrupt is occurred
Option C:	next instruction after the RETI in the memory
Option D:	none of the mentioned
3.	In 8051, the DAA command adds 6 to the nibble if:
Option A:	CY and AC are necessarily 1
Option B:	either CY or AC is 1
Option C:	no relation with CY or AC
Option D:	CY is 1
4.	Which of the following registers of 8051 are not bit addressable?
Option A:	SCON
Option B:	PCON
Option C:	A
Option D:	PSW
5.	What is the function of the TMOD register?
Option A:	TMOD register is used to set various operation modes of timer/counter
Option B:	TMOD register is used to load the count of the timer
Option C:	Is the destination or the final register where the result is obtained after the operation of the timer
Option D:	Is used to interrupt the timer
6.	What does T, D, M, I stand for in ARM7TDMI?
Option A:	Timer, Debug, Multiplex, ICE
Option B:	Thumb, Debug, Multiplier, ICE
Option C:	Timer, Debug, Modulation, IS
Option D:	Thumb, Debug, Multiplier, ICE
7.	The address space in ARM is _____?
Option A:	2^8
Option B:	2^16
Option C:	2^32
Option D:	2^64
8.	Instruction used to multiply R5 contents by R4 and to store the result into R6 is _____.
Option A:	MUL R6, R5, LSL #2
Option B:	MUL R6, R5, R4

Option C:	MUL R6, R5, LSR #2
Option D:	None of the above
9.	If the initial register contents of R0, R1 and R2 were R0= 0x00000000 R1= 0x02040608 R2= 0x10305070 Assume R0 is the result register, after one of the operations below was performed on R1 and R2, which has been modified to R0 = 0x12345678 What was the operation performed on the contents of R2 and R1?
Option A:	AND
Option B:	ORR
Option C:	BIC
Option D:	MUL
10.	**Evaluate the following statements :** I. R13 is traditionally used as the stack pointer and stores the head of the stack in the current processor mode. II. R14 is the link register where the core puts the return address on executing a subroutine. III. R15 is the program counter and contains the address of the next instruction to be fetched.
Option A:	All the options are true
Option B:	I and II are true
Option C:	II and III are true
Option D:	I and III are true

Q2.	**Solve any Four out of Six** **5 marks each**
A	Differentiate between Microprocessor & Microcontroller. .
B	List the features of ARM7.
C	List and explain all addressing modes of 8051.
D	State the validity of following instruction, if not valid why? 1) MOV R2, R3 2) PUSH A 3) MOV DPTR, #3333H 4) MOV A, @R3 5) CMP R0, R1, LSL #04
E	Explain the following ARM7 instructions: 1. RSC R0 2. MLA R0 3. ADDCC R0 4. STRB R0 5. MOV R0
F	Differentiate between RISC and CISC design.

Q3.	Solve any Two Questions out of Three 10 marks each
A	Write a program for 8051 to transfer message "**MADRAS**" serially at a baud rate of 9600 in mode 1. Assume suitable operating frequency.
B	Suppose a LED is interfaced with P0.0 of ARM. Write an embedded C language program to blink this LED with certain delay. Software generated delay may be used.
C	Write a program to generate a rectangular wave of 1KHz with 25% duty cycle, on a display device connected on P1.1. Assume suitable crystal frequency.

Q4.	Solve any Two Questions out of Three 10 marks each
A	Explain Addressing modes of ARM7 Processor with examples in each.
B	Explain Serial communication of 8051 with the help of SCON register.
C	Explain the implementation of stack in ARM using load-store instructions.