

University of Mumbai

Program: **Electronics Engineering**
Curriculum Scheme: Rev. 2019 'C' Scheme
Examination: SE Semester IV

Course Code: ELC403 Course Name: Microcontrollers Applications

Time: 2.30-hour

Max. Marks: 80

Que 1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	If we push data onto the stack then the stack pointer
Option A:	Increases with every push
Option B:	Decreases with every push
Option C:	Increases & decreases with every push
Option D:	Decreases by two with every push
2.	How can we control the speed of a stepper motor?
Option A:	By controlling its switching rate
Option B:	By controlling its torque
Option C:	By controlling its wave drive 4 step sequence
Option D:	Can't be controlled
3.	What is the order decided by a processor or the CPU of a controller to execute an instruction?
Option A:	Decode, fetch, execute
Option B:	Execute, fetch, decode
Option C:	Fetch, execute, decode
Option D:	Fetch, decode, execute
4.	Which out of the four ports of 8051 needs a pull-up resistor for using it is as an input or an output port?
Option A:	PORT 0
Option B:	PORT 1
Option C:	PORT 2
Option D:	PORT 3
5.	Which addressing mode is used in pushing or popping any element on or from the stack?
Option A:	Immediate
Option B:	Direct
Option C:	Indirect
Option D:	Register
6.	The number of address lines and data lines available on 8051 are
Option A:	8-bit & 16-bit each
Option B:	8-bit & 8-bit each
Option C:	16-bit & 8-bit each

Option D:	16-bit & 16-bit each
7.	What is the frequency of the clock that is being used as the clock source for the timer?
Option A:	Some externally applied frequency f
Option B:	Controller's crystal frequency f
Option C:	Controller's crystal frequency /12
Option D:	Externally applied frequency/12
8.	What is the function of the TMOD register?
Option A:	TMOD register is used to load the count of the timer
Option B:	Is the destination or the final register where the result is obtained after the operation of the timer
Option C:	Is used to interrupt the timer
Option D:	TMOD register is used to set various operation modes of timer/counter
9.	Which of the following is used for header files?
Option A:	# include
Option B:	File
Option C:	Struct()
Option D:	Proc()
10.	Which pin of the external hardware is said to exhibit INT0 interrupt?
Option A:	pin no 12
Option B:	pin no 11
Option C:	pin no 10
Option D:	pin no 13

Que 2 (20 Marks)	Solve any Four	5 marks each
A	Write short note on Assembler directives in 8051	
B	Explain following instructions of 8051. 1) ORL A, #05H 2) DJNZ R0, UP	
C	Draw and explain the PSW register of 8051 microcontroller.	
D	Explain various addressing modes of 8051.	
E	Compare RISC and CISC architecture.	
F	Explain Data types and Modifiers in Embedded C	

Que 3 (20 Marks)	Solve any Two	10 marks each
A	Draw and explain the internal RAM memory structure of 8051 microcontroller.	
B	Draw and explain the port structure of 8051 microcontroller	
C	Explain the Interrupt structure of 8051 Microcontroller with register used.	

Que 4 (20 Marks)	Solve any Two	10 marks each
A	Draw and Interfacing diagram of 8051 microcontroller with DAC and write an embedded C program to generate rectangular waveform.	
B	Explain various timer modes for 8051 microcontroller.	
C	Interface a 7-segment led display with 8051, draw the logic interface diagram and write assembly language program to display numbers from 0 to 9 continuously.	