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

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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 8051are
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.