

University of Mumbai

Examination 2020

Examinations Commencing from 7th January 2021 to 20th January 2021

Program: Electronics Engineering

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ELX501 and Course Name: Microcontroller and Applications

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	On power up, the 8051 uses which RAM locations for register R0- R7
Option A:	00-2F
Option B:	00-07
Option C:	00-7F
Option D:	00-0F
2.	To initialize any port as an output port what value is to be given to it?
Option A:	0xFF
Option B:	0x00
Option C:	0x01
Option D:	a port is by default an output port
3.	Which of the following registers are not bit addressable?
Option A:	SCON
Option B:	PCON
Option C:	A
Option D:	PSW
4.	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
5.	What is the advantage of register indirect addressing mode?
Option A:	it makes use of registers R0 and R1
Option B:	it uses the data dynamically
Option C:	it makes use of operator @
Option D:	it is easy
6.	In 8 bit signed number operations, OV flag is set to 1 if:
Option A:	a carry is generated from D7 bit
Option B:	a carry is generated from D3 bit
Option C:	a carry is generated from D7 or D3 bit
Option D:	a carry is generated from D7 or D6 bit

7.	ANL instruction is used _____
Option A:	to AND the contents of the two registers
Option B:	to mask the status of the bits
Option C:	all of the mentioned
Option D:	none of the mentioned
8.	LCALL instruction takes _____
Option A:	2 bytes
Option B:	4 bytes
Option C:	3 bytes
Option D:	1 bytes
9.	Are PUSH and POP instructions are a type of CALL instructions?
Option A:	Yes
Option B:	No
Option C:	none of the mentioned
Option D:	can't be determined
10.	Which bit of the IE register is used to enable TxD/RxD interrupt?
Option A:	IE.D5
Option B:	IE.D2
Option C:	IE.D3
Option D:	IE.D4
11.	To initialize any port as an output port what value is to be given to it?
Option A:	0Xff
Option B:	0x00
Option C:	0x01
Option D:	A port is by default an output port
12.	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
13.	Which of the ports act as the 16 bit address lines for transferring data through it?
Option A:	PORT 0 and PORT 1
Option B:	PORT 1 and PORT 2
Option C:	PORT 0 and PORT 2
Option D:	PORT 1 and PORT 3
14.	The ARM7TDMI-S processor has _____ types of memory cycle.
Option A:	5
Option B:	3
Option C:	4
Option D:	2

15.	ARM7TDMI has a total of ____ registers.
Option A:	37
Option B:	24
Option C:	8
Option D:	16
16.	ARM7TDMI has a total of ____ General Purpose registers
Option A:	31
Option B:	24
Option C:	8
Option D:	16
17.	ARM7TDMI has a total of ____ status registers
Option A:	6
Option B:	24
Option C:	8
Option D:	16
18.	The ARM7TDMI is an ARM7 core with ____ additional features.
Option A:	4
Option B:	10
Option C:	15
Option D:	20
19.	What are the pipelining stages include?
Option A:	Fetch, Decode, Write
Option B:	Fetch, Decode, Execute
Option C:	Fetch, Execute, Write
Option D:	Fetch, Decode, Execute, Write
20.	How many processors are used in the Instruction pipelining?
Option A:	1
Option B:	2
Option C:	3
Option D:	4

Q2(20 Marks)	Solve any Four out of Six 5 marks each
A	Explain following instructions of 8051 microcontroller with example. i) MOVX ii) CJNE iii) JB iv) AJMP v) SWAP
B	A switch is connected to pin P2.0 and an LED to pin P1.7 .Write a program to get the status of the switch and send it to the LED.

C	What is the Thumb2 mode of operation of Cortex M3? State its advantages.
D	Assume that the stack pointer points to memory location 3FH and the contents of the memory location 30H, 31H and 32H are 00, 88, and FF respectively. Illustrate the stack contents after the execution of each of the following instructions. PUSH 30H PUSH 31H PUSH 32H
E	Write a short note on the Internal memory organization of 8051.
F	Ten 8 bit numbers are stored in internal data memory from location 50H. Write a program to increment the data.

Q3.(20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Discuss NVIC and MPU of ARM Cortex M3 processor.
B	Explain interrupt structure of 8051 with suitable diagram. Hence explain all SFRs associated with interrupt.
C	Explain various addressing modes of 8051 with examples. a. Write a program to transfer message 'NO' serially with a baud rate of 9600 continuously. b. Explain various timer modes for 8051