University of Mumbai
Examination 2020

Program: **Electronics Engineering**
Curriculum Scheme: **Rev 2016(Choice Based)**
Examination: **TE Semester V**
Course Code: ELX501 and Course Name: Microcontrollers &Applications
Time: 2 hour **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.	MOV A, R4 is an example of _____ addressing mode.
Option A:	Immediate addressing mode
Option B:	Register addressing mode
Option C:	Indirect addressing mode
Option D:	Indexed addressing mode
2.	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
3.	The register bank size in ARM CORTEX-M3 architecture is _____.
Option A:	8-bit
Option B:	16-bit
Option C:	24-bit
Option D:	32-bit
4.	The symbol, ‘addr 16’ represents the 16-bit address which is used by the instructions to specify the_____
Option A:	Destination address of CALL
Option B:	Destination address of call or jump
Option C:	Source address of JUMP
Option D:	Source address of call or jump
5.	On reset of 8051, value in stack pointer is _____.
Option A:	00H
Option B:	30H
Option C:	07H
Option D:	FFH
6.	Timer of 8051 operates in _____ as 8 bit auto reload mode.
Option A:	Mode2
Option B:	Mode1
Option C:	Mode0
Option D:	Mode3

7.	For LCD to latch the data at the data pins, there should be a_____
Option A:	High to low pulse applied at E
Option B:	Low to high pulse applied at E
Option C:	A low signal applied at E
Option D:	A high signal applied at E
8.	Most of the processors designed by ARM are____
Option A:	16bits
Option B:	32bits
Option C:	8bits
Option D:	64bits
9.	What is the value of timer to generate delay of 5ms?
Option A:	FF20H
Option B:	EE62H
Option C:	EE00H
Option D:	FF00H
10.	Which of the following statements about relays are false?
Option A:	Relays isolate two sections with two different voltage sources
Option B:	Electro mechanical relays have coils, springs and contacts
Option C:	Relay contacts can be NO or NC
Option D:	Relays can be driven directly by microcontroller
11.	When the ports used as input lines then the value that must be written to the port address is
Option A:	0FH
Option B:	FFH
Option C:	0AH
Option D:	AAH
12.	In SCON register, REN bit is used for____
Option A:	Enable/disable the serial data reception
Option B:	Enable/disable the flag
Option C:	enable/disable the SBUF
Option D:	Enable/disable the interrupts
13.	What is the value of TH1 for baud rate 4800 if SMOD=1 and XTAL=11.0592MHz?
Option A:	F4H
Option B:	FAH
Option C:	F3H
Option D:	F6H
14.	How does the processor respond to an occurrence of the interrupt?
Option A:	By Interrupt Service Subroutine
Option B:	By Interrupt Status Subroutine
Option C:	By Interrupt Structure Subroutine
Option D:	By Interrupt System Subroutine

15.	8 step switching sequence for stepper motor is also known as _____
Option A:	Half stepping
Option B:	Fine stepping
Option C:	Full stepping
Option D:	Par stepping
16.	Which hex code do we have to send to 16X2 LCD to force cursor from beginning of the 1st line?
Option A:	80H
Option B:	90H
Option C:	A0H
Option D:	C0H
17.	LJMP instruction of 8051 microcontroller is _____.
Option A:	Single Byte
Option B:	Two Byte
Option C:	Three Byte
Option D:	Four Byte
18.	To use Timer 1 as a counter, the clock pulse is applied to pin ___.
Option A:	P3.4
Option B:	P3.5
Option C:	P3.0
Option D:	P3.1
19.	What is the meaning of the instruction MOV A,05H?
Option A:	Data 05H is stored in the accumulator
Option B:	Fifth bit of accumulator is set to one
Option C:	Data of address 05H is stored in the accumulator
Option D:	Data 05H copy to accumulator and keep as it is
20.	Which commands are used for addressing the off-chip data and associated codes respectively by data pointer?
Option A:	MOVX & MOVC
Option B:	MOVY & MOVB
Option C:	MOVZ & MOVA
Option D:	MOVC & MOVY

Q2. (20 Marks)	Solve any Four out of Six 5 marks each
A	Explain internal memory organization of 8051.
B	Explain interrupt Structure of 8051 with suitable diagram.
C	Explain TMOD register of 8051.
D	Draw interfacing diagram of 8051 microcontroller and DC motor. Explain
E	Ten 8 bit number stored in internal data memory starting from 50H, Write a program to perform the addition of ten 8 bit numbers
F	Explain register architecture of CORTEX-M3.

Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Discuss 8051 timer SFRs and write a program in assembly language to generate a square wave of 1 KHz. Show required calculation for the same (Assume Crystal frequency=11.0592MHz)
B	Draw and explain the PORT structure of 8051.
C	Discuss NVIC and MPU of ARM Cortex M3 Processor