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.	The magnitude of 8 bit signed binary number is
Option A:	7bit
Option B:	8 bit
Option C:	9 bit
Option D:	6 bit
2.	FFH is which type of number
Option A:	Hexadecimal
Option B:	Octal
Option C:	Decimal
Option D:	Binary
3.	If the program has a total 1000 instructions and CPU has 10 average CPI with speed of 2GHz. Find the execution time of a program
Option A:	01 micro seconds
Option B:	50 micro seconds
Option C:	05 micro seconds
Option D:	10 micro seconds
4.	Assuming AL=00H, which flag will be set when ALU performs SUB AL, 22H?
Option A:	Sign
Option B:	Carry
Option C:	Parity
Option D:	Zero
5.	The first machine cycle of an instruction is always a _____
Option A:	Memory read
Option B:	Fetch cycle
Option C:	I/O read
Option D:	Memory write
6.	In Instruction Pipelining Structural Hazard means _____
Option A:	Any condition in which either the source or the destination operands of an instruction are not available at the time expected in the pipeline
Option B:	A delay in the availability of an instruction causes the pipeline to stall
Option C:	The situation when two instructions require the use of a given hardware resource at the same time.
Option D:	When a data gets overwritten by branching
7.	In the case of Non Restoring Division Algorithm, when $(18)_{10}$ is divided by $(10)_{10}$, then what is stored in the registers Q & A respectively ?
Option A:	0001 , 1000
Option B:	0110 , 0001
Option C:	1000, 0001

Option D:	0001, 1010
8.	Program counter holds _____
Option A:	Address of the instruction
Option B:	The data of instruction
Option C:	Instruction opcode
Option D:	Flag information
9.	In memory Hierarchy which is the fastest memory
Option A:	Main memory
Option B:	Secondary memory
Option C:	Register
Option D:	Cache
10.	DMA is used when _____
Option A:	I/O device is faster than the microprocessor
Option B:	I/O device is slower than the microprocessor
Option C:	I/O device and microprocessor are of same speed
Option D:	when speed is not the criteria for selection

Please use either of the 3 option given below while setting up the subjective/descriptive questions

Option 1

Q2 (20 Marks Each)	**Solve any Four out of Six** **5 marks each**
A	Explain multiplexer and demultiplexer
B	Explain following instructions of 8086 Microprocessor with one example each. 1) SBB 2) JMP 3) MOV 4) STD 5) NOT
C	Describe Flynn's classification of parallel computing in detail.
D	Perform 7 ÷ 2 using the Restoring Division Algorithm.
E	List and explain in detail the characteristics /parameters of memory
F	Why I/O modules are required in microprocessor systems

Option 1

Q3 (20 Marks Each)	**Solve any Four out of Six** **5 marks each**
A	Explain SR and JK flip flop
B	Write an assembly language program to add two 16 bit BCD numbers and store the result.
C	Give the organization of the Hardwired control Unit and explain the function performed by various blocks.
D	Explain following assembler directives of 8086 Microprocessor. 1)ASSUME 2) DUP 3) SEGMENT 4) ENDP 5) DB
E	Explain associative cache mapping technique
F	What is meant by programmed controlled I/O

Option 1

Q4. (20 Marks Each)	**Solve any Four out of Six** **5 marks each**
A	Convert 25 decimal to binary
B	Identify the addressing modes of the following instructions 1.MOV CX, 2200H

	2.MOV AX,[1000H] 3.MOV CL, AL 4.MOV [SI], AX 5.MOV AX, [SI+200]
C	Explain the concept of nano programming
D	Explain Amdahl's Law.
E	Consider a direct mapped cache with block size 4 KB. The size of the main memory is 16 GB and there are 10 bits in the tag. Find- 1. Number of bits in physical address 2. Number of bits in block offset 3. Number of bits in line number
F	Write short notes on DMA