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

Program: Computer Engineering
Curriculum Scheme: Rev2019
Examination: Second Year Semester: III

Course Code: CSC304 Course Name: Digital Logic and Computer Architecture
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.	The value of the bias in IEEE 754 double precision floating point format is ----.
Option A:	511
Option B:	127
Option C:	1023
Option D:	255
2.	The register PC ------
Option A:	holds the address of the next instruction to be fetched.
Option B:	holds the next instruction to be fetched.
Option C:	holds the operands that are being fetched.
Option D:	holds the result of the last instruction.
3.	Stored program concept was given by ----.
Option A:	John Von Neumann
Option B:	Alan Turing
Option C:	Charls Babbage
Option D:	Edsger W. Dijkstra
4.	Structural hazard arises due to_____
Option A:	Data conflict
Option B:	Resource conflict
Option C:	Branch conflict
Option D:	Address conflict
5.	Which operation is performed in booth's algorithm.
Option A:	Arithmetic left shift
Option B:	Logical left shift
Option C:	Arithmetic right shift
Option D:	Logical right shift

6.	The addressing mode used in an instruction of the form ADD AX , 07h is _____
Option A:	Direct
Option B:	Indirect
Option C:	Immediate
Option D:	Absolute
7.	In the memory hierarchy, as we go down the pyramid,
Option A:	Cost per bit decreases, Capacity increases, Access Time increases
Option B:	Cost per bit increases, Capacity decreases, Access Time decreases
Option C:	Cost per bit increases, Capacity increases, Access Time decreases
Option D:	Cost per bit decreases, Capacity decreases, Access Time decreases
8.	Convert the binary number 1001.00101 to decimal.
Option A:	9.512
Option B:	9.550
Option C:	10.23
Option D:	9.156
9.	Convert the binary number 110010100 to Gray code.
Option A:	101011110
Option B:	111011100
Option C:	110011000
Option D:	111011100
10.	Convert the hexadecimal number 1CF to decimal.
Option A:	446
Option B:	465
Option C:	463
Option D:	436
11.	Which of the following is an invalid BCD code?
Option A:	1100 1001
Option B:	1000 0010
Option C:	1001 0111
Option D:	0101 1001
12.	Convert binary 111111110010 to hexadecimal.
Option A:	F22
Option B:	2FF
Option C:	FF1
Option D:	FF2
13.	Represent (-35) decimal in 2's complement representation
Option A:	1100011
Option B:	1011101
Option C:	1011001
Option D:	1001111

14.	Simplify P = X (Y+Z')' (X'Y)' using boolean laws
Option A:	XYZ'
Option B:	XYZ
Option C:	X'YZ
Option D:	XY'Z
15.	Perform binary division 1110100 / 100
Option A:	11001
Option B:	11101
Option C:	11011
Option D:	11000
16.	Result of the division (7/3) by using restoring division algorithm is
Option A:	M = 0111, Q = 0001, A = 0010
Option B:	M = 0011, Q = 0010, A = 0001
Option C:	M = 0111, Q = 0010, A = 0001
Option D:	M = 1111, Q = 0010, A = 0001
17.	The standard SRAM chips are costly as _____
Option A:	They use highly advanced micro-electronic devices.
Option B:	They have 6 transistor per chip, so cost per bit increases.
Option C:	They require specially designed circuit boards.
Option D:	They are inefficient in operation speed.
18.	To extend the connectivity of the processor bus we use _____
Option A:	PCI bus
Option B:	SCSI bus
Option C:	Controllers
Option D:	Multiple bus
19.	Which factor determines the effectiveness of the cache?
Option A:	Hit rate
Option B:	refresh cycle
Option C:	refresh rate
Option D:	refresh time
20.	Which factor determines the number of cache entries?
Option A:	set commutativity
Option B:	set associativity
Option C:	size of the cache
Option D:	number of caches

Q2. **(20 Marks)**	**Solve any Four out of Six.** **5 marks each**
A	Explain Booth's Algorithm. Perform multiplication of (-12 * 5) using booths algorithm.

B	Explain Von Neumann model. What is the role of different registers like IR, PC, MAR, MBR in Von Neumann model.
C	What is flip flop? Write truth table of SR, JK, D, T flipflop.
D	Explain instruction cycle with neat diagram.
E	What is bus arbitration? Explain types of bus arbitration.
F	Perform hexadecimal subtraction using 16s complement CB1 - 971

Q3. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Differentiate between hardwired and microprogrammed control unit and Explain Wilke's Microprogrammed control unit with neat diagram.
B	Explain direct mapping technique.
C	Write short note on amdahl's law and Explain Flynn's classification.