International Institute of Information Technology, Hyderabad

(Deemed to be University)

EC2.101 – Digital Systems and Microcontrollers – Monsoon 2019-20

Quiz 1: Set A

Max. Time: 30 min **Date: 25th November, 2022** **Max. Marks: 60**

All questions have ONE correct answer. Answers to be marked on the question paper itself
+3 for correct answer, -1 for incorrect.
NO CALCULATORS ALLOWED

Name:_____ **Roll No:** _____

Q1. Convert the number: $(39.3)_{10}$ into binary
a. $(100100.1)_2$ b. $(100110.11)_2$ c. $(100111.1)_2$ d. $(100110.11)_2$

Q2. Which of the following numbers will be a perfect square in any base r (>2)?
a. $(121)_r$ b. $(64)_r$ c. $(101)_r$ d. $(1000)_r$

Q3. Convert the number: $(BCD)_{16}$ into decimal
a. 3023 b. 3903 c. 129 d. 3021

Q4. Convert the number: $(7.77)_8$ into hexadecimal
a. 7.AB b. 7.FC c. 7.77 d. 7.9C

Q5. In 1's complement subtraction, if an extra carry is obtained then
a. The result is negative b. It is discarded
c. There is an overflow d. It is added to the sum

Q6. How is +9 represented in 5-bit, signed 2'complement notation?
a. 1001 b. 01001 c. 11001 d. 01010

Q7. Signed 2's complement representation system is popular because
a. Has two representations for 0 b. '1' in MSB represents negative numbers
c. Arithmetic is simpler d. All of the above

Q8. How many more bits are required to represent $(53)_{10}$ in BCD compared to binary?
a. 8 b. 2 c. 4 d. 6

Q9. How many numbers can be represented using 32-bit floating point numbers (IEEE 754)?
a. 2^32 b. 2^256 c. 2^127 d. 2^128

Q10. The expression $xy + xyz' + yz + x'y$ simplifies to:
a. xy b. xz c. y d. $xy + yz + x'y$

Q11. Which postulate ensures that functions of Boolean variables and operations are also Boolean?
a. Commutation b. Association
c. Closure d. Distribution

Q12. What is the identity for the XOR function:
a. 0 b. 1 c. Both d. None

Q13. Which of the following is an identity for the NAND function?

a. 0 b. 1 c. Both d. None

Q14. What is $(10101)_2$ divided by $(101)_2$?

a. $(8)_{10}$ b. $(6)_{10}$ c. $(101)_2$ d. $(11)_2$

Q15. What is the representation for 4-bit 2's complement binary number $(1011)_2$ in 2-digit signed 9's complement decimal number?

a. 94 b. 91 c. 95 d. 05

Q16. Assume that we are encoding text characters as 8-bit binary numbers. How many bits will it take to transmit the text: "10001010"?

a. 8 b. 64 c. 128 d. 32

Q17. The expression $x(x' + y)$ is equivalent to:

a. xy b. $xy(x + x')$ c. $xy + xyx'$ d. All the above

Q18. A 3-variable function F(x,y,z) has minterms m_6 and m_7. What is the function?

a. yz b. xz c. xy d. All the above

Q19. A 3-variable function F(x,y,z) has maxterms M_0 and M_1. What is the function?

a. (x+y) b. (y+z) c. (x+y+z) d. xy

Q20. Which function answers the question: (is x=y?)?

a. XOR b. Inhibition c. Implication d. XNOR

Rough work