Candidate Seat No._____

Charotar University of Science and Technology [CHARUSAT]

Faculty of Technology and Engineering

U & P U. Patel Department of Computer Engineering & Computer Science and Engineering

Subject: CE258 Microprocessor and Computer Organization

Unit Test-1

Semester: 4th Sem B.Tech (CE/CSE) **Maximum Marks: 30**

Date: 16/02/2022 (Wednesday) **Time: 3:00 PM to 4:00 PM**

Instructions:

(i) Scientific calculator is not allowed.

(ii) Figures to the right indicate ***full*** marks.

(iii) Make suitable assumptions and draw neat figures wherever if required.

Q-1 Answer the following questions. **[15]**

[A] Convert $(2432.46)_{10}$ to Hexa decimal representation. [01]

[B] Calculate *r's* complement of $(74630)_9$. [01]

[C] How many 1's are there in the binary representation of $(6 * 128^3 + 0 * 128^2 + 3 * 128 + 2)$? [01]

[D] Let the representation of a number in base 3 be 210. What is the hexadecimal representation of the number? [01]

[E] If x and y are two decimal digits and $(0.1101)_2 = (0.8xy5)_{10}$, What is the decimal value of x + y ? [01]

[F] Perform following multiplication operation using Booth Algorithm. Show all the steps. (Flow chart is not required) [05]

$(-21)_{10} \times (12)_{10}$

[G] There are RAM and ROM of 256 × 8 and 512 × 8 respectively. Design main memory which is combination of 512B of RAM and 512B of ROM. Each are byte addressable. Draw CPU memory connection diagram and also show the memory address map. CPU address bus is 16 bits. [05]

Q-2 Answer the following questions. **[15]**

[A] What is use of half adder and full adder? Derive the equation and draw circuits of both of them with truth tables. [05]

[B] Explain arithmetic left-shift and right-shift. Perform arithmetic left-shift and right-shift for 2-bit position on signed-bit number 10011010. [05]

[C] List out the instruction formats. Draw the flow chart for determining the type of instruction. [05]

****Best of Luck****