FOUNTAIN UNIVERSITY, OSOGBO, NIGERIA.

P.M.B.4491, OSOGBO, OSUN STATE.

COLLEGE OF NATURAL AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICAL AND COMPUTER SCIENCES

SECOND SEMESTER EXAMINATION 2021/2022 SESSION

CPS 208: Computer Architecture and Organization **CREDIT UNIT/STATUS: 2 (C)**

Duration: 2hrs 12/08/2022

INSTRUCTION(s): ANSWER ANY THREE (3) QUESTIONS

1. (a) Write short note on the following (i) Computer Architecture (ii) Computer Organization (4 Marks)
   (b) What are the differences between Computer Architecture and Computer Organization. (5 Marks)
   (c) Briefly discuss any Six advantages of computer system. (6 Marks)
   (d) Distinguished between SRAM and DRAM (5 Marks)

2 (a) Briefly define the following (i) Computer Hardware (iii) Computer Software (5 Marks)
   (b) What are the issues involved in computer design (6 Marks)
   (c) Perform the following operations (i) $355_8 + 616_8$ (ii) $B503_{16} - 995A_{16}$ (9 Marks)
   (iii) $11110_2 * 101_2$

3 (a) Explain concisely what the following terms means (i) computer register (ii) signed magnitude (iii) Asynchronous data transfer (iv) hardwired control (10 Marks)
   (b) Enumerate the functions of the Control Unit (4 Marks)
   (c) Represent $(-3)_{10}$ in 8-bit binary memory location using (i) signed magnitude (ii) one's complement (iii) two's complement (6 Marks)

4. (a) Discuss in details what logic gate means. (5 Marks)
   (b) What are advantages and disadvantages of Single Accumulator based Central Processing Unit organization (5 Marks)
   (c) Represent $(-375.25)_{10}$ in binary with IEEE 754 (i) 32 bit floating-point notation (Single precision) (ii) 64 bit floating-point notation (Double precision) (10 Marks)

5. (a) Write short note on (i) Fault-tolerant computing (ii) Arithmetic logic unit (iii)Hardware Fault-Tolerance (6 Marks)
   (b) Write out algorithm for implementing Expression: X = (A+B)*(C+D) using Two Address Instructions (8 Marks)
   (c) What are the features of Fault-tolerant system. (6 Marks)

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