Total No. of Questions: 6 *Total No. of Printed Pages: 2*

Enrollment No. EN21CS304039

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

CS3CO22 / CS3CO34 / IT3CO20

Computer System Architecture

Programme: B.Tech. Branch/Specialisation: All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. The ALU makes use of _____ to store the intermediate results. **1**

(a) Accumulators (b) Registers (c) Heap (d) Stack

ii. Subtraction in computers is carried out by- **1**

(a) 1's complement (b) 2's complement

(c) 3's complement (d) 9's complement

iii. Which addressing mode execute its instructions within CPU without the necessity of reference memory for operands? **1**

(a) Implied mode (b) Immediate mode

(c) Direct mode (d) Register mode

iv. Which of the following is not a function of pass-1 of an assembler? **1**

(a) Generate data (b) Keep track of LC

(c) Remember literals (d) Remember values of symbols

v. The result of subtraction using 2's complement of 1111-0010 will be _____. **1**

(a) 11101 (b) 1101 (c) 11011 (d) 1011

vi. In Booth's multiplication algorithm, for Multiplier 1000 and multiplicand =1100 then how many numbers of cycles are required to get the correct multiplication result? **1**

(a) 5 (b) 2 (c) 8 (d) 4

vii. _____ method is used to map logical addresses of variable length into physical memory. **1**

(a) Paging (b) Overlays

(c) Segmentation (d) Paging with segmentation

viii. _____ translates/convert the logical address into the physical address. **1**

(a) Translator (b) Compiler (c) MMU (d) Linker

P.T.O.

ix. Any condition that causes a processor to stall is called as _____. 1

(a) Hazard (b) Page fault

(c) System error (d) None of these

x. _____ have been developed specifically for pipelined systems. 1

(a) Utility software (b) Speed up utilities

(c) Optimizing compilers (d) None of these

Q.2 i. Explain the types of computers with example. 2

ii. Draw and explain basic functional unit of computer system. 3

iii. What is microoperations? Explain arithmetic, logic and shift microoperations in detail. 5

OR iv. Explain bus structure in detail and draw diagram of common bus structure. 5

Q.3 i. What is memory reference instructions? 2

ii. Define and explain addressing modes with diagrams and examples. 8

OR iii. Explain instruction cycle using flowchart and memory reference registers. 8

Q.4 i. Show addition and subtraction of two signed magnitude data with their hardware implementation. 3

ii. Multiply (+7) *(+12) using Booth's multiplication algorithm. 7

OR iii. Explain division algorithm with flowchart. What do you understand by divide overflow condition that arises during division? 7

Q.5 i. What is the use of I/O interface? How data is transferred asynchronously? 4

ii. How priority interrupt is handled by CPU? Explain both Software and hardware priority interrupt. 6

OR iii. Explain associative memory with its mapping techniques. 6

Q.6 Attempt any two:

i. Explain arithmetic pipeline with flowchart and example. 5

ii. What is an array processor and types of array processor? 5

iii. Explain multiprocessor architecture and multicore architecture. 5

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