

Roll No.

Total No. of Pages : 02

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B.Tech. (ECE)/(EE) (Sem.-7,8)

COMPUTER ORGANIZATION AND ARCHITECTURE

Subject Code : BTES-401-18

M.Code : 90491

Date of Examination : 04-12-2023

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- 1) Write briefly :
 - a) What is Computer Architecture and what are its functional blocks?
 - b) Take one example and show the working of carry save multiplier.
 - c) Differentiate between hardwired and micro-programmed design approaches.
 - d) Give examples of privileged and non-privileged instructions.
 - e) Define an interrupt. How they can be helpful for process state transition?
 - f) Why is pipelining important? Name few of the pipeline hazards.
 - g) What is memory interleaving? How can we achieve concurrent access to memory?
 - h) Explain the instruction execution cycle.
 - i) Mention few mapping functions used for memory organization.
 - j) What are the advantages of division restoring and non-restoring techniques?

SECTION-B

- 2) Explain how the computer buses can be used to communicate with memory and I/O. Also, draw a block diagram to show CPU and IO Processor communication.
- 3) Describe the instruction set architecture of a CPU explaining registers and execution cycle.
- 4) Explain in detail the principle of Carry Look Ahead (CLA) adder and Design-Bit CLA adder.
- 5) Discuss the different mapping techniques used in cache memories and their relative merits and demerits.
- 6) Using Booth Multiplier algorithm, perform the multiplication on the following 6-bit unsigned integer $10110011 * 11010101$.

SECTION-C

- 7) Explain the I/O device interfaces-SCII and USB in detail.
- 8) Describe all types of the data representation (signed, fixed, floating and character) by taking a suitable example for each.
- 9) Write short notes on the following :
 - a) Replacement Algorithms *w.r.t* memory organization
 - b) Program Controlled I/O transfers.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.