

Roll No.

OLE-24165

B. Tech. 5th Semester (ECE) Examination – April, 2021

COMPUTER ARCHITECTURE AND ORGANIZATION

Paper : CSE-210-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting at least *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Answer the following questions : $5 \times 4 = 20$
- (a) Master slave JK flip flop with its truth table.
 - (b) Flynn's classification of computers.
 - (c) Define Accumulator logic. Also draw the diagram and functioning of it.

- (d) Fetch- Decode- Execute cycle with diagram.
- (e) Pipelining and super scaling system.

SECTION – A

- 2. (a) Design an Mod-10 Asynchronous counter with its timing state diagram and truth table. 10
- (b) Design different types of flip- flops with XOR gate and truth table. 10
- 3. (a) Describe : 10
 - (i) MIPS
 - (ii) MFLOPS
- (b) Explain Multiplexer and D-multiplexer. Deign a 16:4 Mux using NAND gates with its truth table. 10

SECTION – B

- 4. (a) Explain features of RISC and CISC processors. 10
- (b) Explain Addressing modes. Give an example to show operation of each mode. 10

5. (a) What are instructions ? Explain Instruction cycle with example and timing diagram. 10
- (b) Explain Instruction set. Draw and explain structure of Fixed, Variable and hybrid instructions with example. 10

SECTION – C

6. (a) Define cache memory. 10
- (b) Explain following mapping with example : 10
- (i) Associative Mapping
 - (ii) Direct Mapping
 - (iii) Set Associative Mapping
7. (a) What is control unit ? Explain 3-stage CPU cycle in register based CPU organization. 10
- (b) Explain the need of memory hierarchy. What is the principle of Locality of reference ? Also explain RAM and ROM architecture. 10

SECTION – D

8. (a) What is parallelism ? Explain Amdahl's law of parallelism. 10
- (b) Differentiate between Instruction Level Parallelism and processor level Parallelism. 10
9. (a) Explain Instruction set in 8086. 10
- (b) Explain 3 types of Interrupts in 8086 architectures with diagram and example. 10
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