3217

B. Tech. 5th Semester (ECE) Examination – December, 2022

COMPUTER ORGANIZATION & ARCHITECTURE

Paper : PCC-ECE-303-G

Time : Three Hours] *[Maximum Marks : 75*

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 *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Write a short notes on :

(a) What are gray codes ? Explain. 2.5

(b) How auxiliary memory is different from main memory ? Explain. 2.5

(c) What are computer registers ? 2.5

(d) What is vector processing ? Explain. 2.5

(e) What is virtual memory ? Explain. 2.5

(f) Explain stack organization. 2.5

UNIT – I

2. Draw and explain the detailed data path for a register-based CPU in detail. 15

3. Write a short note on the following : 15

(a) Register Transfer Language

(b) Shift Microoperations

UNIT – II

4. Explain any *five* addressing modes with examples. 15

5. What do you mean by a register ? Draw the block diagram of a 4-bit bi-directional shift register. 15

UNIT – III

6. Explain the following in detail : 15

(a) Amdahl's Law

(b) SIMD Array Processors

(d) What is vector processing ? Explain. 2.5

(e) What is virtual memory ? Explain. 2.5

(f) Explain stack organization. 2.5

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(b) SIMD Array Processors

7. Describe SISD, SIMD, MIMD. 15

UNIT – IV

8. Explain memory hierarchy in detail. Explain associative memory in detail. 15

9. Define cache memory. Explain following mapping with example : 15

(a) Direct mapping

(b) Set-Associative mapping