Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 81055

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Second Semester

Applied Electronics

AP 9222/AP 922/UAP 9154/10244 AE 202 – COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

(Common to : M.E. VLSI Design, M.E. - Computer and Communication, M.E - Embedded System Technologies, M.E. Digital Electronics and Communication Engineering and M.E. Digital Signal Processing)

(Regulation 2009/2010)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Why MIPS cannot be used as a performance measure always?

2.   Mention any two differences between multi-vector track and SIMD track.

3.   Draw chordal ring of degree 3.

4.   State Amdahl's law.

5.   What is address mapping?

6.   Mention any two uses of broad call.

7.   What is mosaic C node?

8.   Write any two limitations of crossbar.

9.   State any two differences between synchronous message passing and asynchronous message passing.

10. What is microtasking?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the shared-memory multiprocessors with a neat diagram. (8)

    (ii) Write about hardware and software parallelism with an example for each. (8)

Or

    (b) Explain PRAM and VLSI Models with a neat diagram for each. (16)

12. (a) (i) Discuss the grain packing and scheduling. (8)

    (ii) Explain perfect shuffle and its inverse mapping over eight objects. (8)

Or

    (b) (i) Write and explain any two applications of parallel processing. (8)

    (ii) Discuss the scalability analysis and its approaches briefly. (8)

13. (a) Explain the various advanced processor technologies in detail. (16)

Or

    (b) (i) Discuss about backplane bus systems in detail. (8)

    (ii) Explain the sequential and weak consistency models briefly. (8)

14. (a) (i) Explain the design of instruction pipeline with an example. (8)

    (ii) Write and explain the principles of multithreading briefly. (8)

Or

    (b) (i) Discuss the design of arithmetic pipeline with an example. (8)

    (ii) Draw and explain the modular construction of butterfly switch networks with 8 × 8 crossbar switches. (8)

15. (a) (i) Write and explain the language features for parallelism briefly. (8)

    (ii) Discuss the loop parallelization and pipelining with an example. (8)

Or

    (b) (i) Describe the shared - variable program structures with their locking mechanisms briefly. (8)

    (ii) Explain the architecture of OSF/1 with its design layers. (8)