Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 27162

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Third Semester

Computer Science and Engineering

CS 6303 — COMPUTER ARCHITECTURE

(Common to Information Technology)

(And also common to Fifth Semester Elective – Electronics and Instrumentation Engineering, Instrumentation and Control Engineering and Fifth Semester – Robotics and Automation Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Instruction set architecture?

2. How CPU execution time for a program is calculated?

3. What are the overflow/underflow conditions for addition and subtraction?

4. State the representation of double precision floating point number.

5. What is a hazard? What are its types?

6. What is meant by branch prediction?

7. What is ILP?

8. Define a super scalar processor.

9. What are the various memory technologies?

10. Define Hit ratio.

PART B — (5 × 16 = 80 marks)

11. (a) Explain in detail the various components of computer system with neat diagram. (16)

Or

(b) What is an addressing mode? Explain the various addressing modes with suitable examples. (16)

12. (a) Explain in detail about the multiplication algorithm with suitable example and diagram. (16)

Or

(b) Discuss in detail about division algorithm in detail with diagram and examples. (16)

13. (a) Explain the basic MIPS implementation with necessary multiplexers and control lines. (16)

Or

(b) Explain how the instruction pipeline works? What are the various situations where an instruction pipeline can stall? Illustrate with an example. (16)

14. (a) Explain in detail Flynn's classification of parallel hardware. (16)

Or

(b) Explain in detail about hardware Multithreading. (16)

15. (a) What is virtual memory? Explain in detail about how virtual memory is implemented with neat diagram? (16)

Or

(b) Draw the typical block diagram of a DMA controller and explain how it is used for direct data transfer between memory and peripherals? (16)