Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PCCS 4301

Fifth Semester Regular Examination – 2014

COMPUTER ORGANIZATION

BRANCH(S) : CSE, IT

QUESTION CODE : H 130

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) What is the purpose of the system bus in the design of the modern computer ?

   (b) Differentiate between computer architecture vs. computer organization.

   (c) What are the types of instructions ? Define and differentiate between instruction interpretation and instruction execution.

   (d) What are the six stages of an instruction cycle ?

   (e) What is the difference between a source operand and the destination operand of an instruction ?

   (f) Give an example of zero address, one address, two address and three address instructions.

   (g) Differentiate between "synchronous bus" and "asynchronous bus".

   (h) What are operations performed on data in 8085 ?

   (i) Why computers' memory systems are typically built as hierarchies ?

   (j) Write the steps to retrieve a word from a memory location by the CPU.

P.T.O.

2. (a) What are the steps perform to execute an instruction in CPU ? Explain your answer with reference to the CPU with single-bus organization. 5

(b) What is a bus ? Draw a single bus structure arrangement showing connectivity to various units of computer system. Explain the operations of I/O devices using single bus. 5

3. (a) Give an account of different addressing modes. 5

(b) What does a CPU's control unit do ? What is the fetch and execute cycle ? How much time does the CPU need to refer to memory when it fetches and executes an instruction in indirect-address-mode ? 5

4. (a) Write the Booth's Algorithm for multiplying two binary numbers in signed-2's complement representation. 5

(b) Explain the representation of floating point number (single precision and double precision) in IEEE-754 standards. Show the IEEE Floating Point representation of number $2.35_{decimal}$ in single precision. 5

5. (a) Draw a diagram showing the main components of the Von Neumann model of computing, with a brief explanation of each component and how it interacts with the rest ? 5

(b) Design and explain fast addition and multiplication. 5

6. (a) What is the need of micro-programmed control unit ? Draw the block diagram of micro-programmed control unit to explain conditional branching in the micro-program. 5

(b) Give an account of RISC vs CISC architecture. 5

7. (a) What is virtual memory and why is it used ? Give reasons why the page size in a virtual memory system should be neither very small nor very large ? 5

(b) Give an account of page replacement policies. 5

8. Write short notes on any **two** of the following : 5 × 2

(a) Big-endian vs little-endian representation

(b) Integer division

(c) Hardware controlled

(d) Cache memory.