

Registration No. :

--	--	--	--	--	--	--	--	--	--

Total number of printed pages – 2

B. Tech  
FECE 6401

**Seventh Semester Regular Examination – 2014**

**COMPUTER SYSTEM ARCHITECTURE**

**BRANCH : AEIE, EC, ETC, IEE**

**QUESTION CODE : H 285**

**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. Write short notes on the following : 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) Give an example of immediate addressing mode.
  - (d) Differentiate between fetch and execute instruction.
  - (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) Differentiate between RISC and CISC architecture.
  - (i) Give the memory hierarchy of a computer system.
  - (j) Write the steps to retrieve a word from a memory location by the CPU.
2. (a) Give the basic structure of computer. Explain how the various functional units operate inside the computer. 5

**P.T.O.**

- (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 Big-endian and little-endian representation. 5  
(b) What is the difference between direct and indirect addressing modes ? Explain with examples. 5
4. (a) Write the Booth's Algorithm for multiplying two binary numbers in signed-2's complement representation. 5  
(b) Explain the operations on floating point numbers. 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) Explain how a direct mapping from 512 KB of cache to 512 MB of RAM can be made. 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) Assembly language  
(b) Performance of computers  
(c) Hardware controlled  
(d) Memory management requirement.