

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (New) EXAMINATION – WINTER 2015

Subject Code:2140707

Date:30/12/2015

Subject Name: Computer Organization

Time: 2:30pm to 5:00pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1 (a)** What do you mean by register transfer? Explain in detail. Also discuss three-state bus buffer. **07**
- (b)** Write a detailed note on instruction cycle with neat diagrams. **07**
- Q.2 (a)** Explain register stack and memory stack with neat sketches. **07**
- (b)** A computer uses a memory unit with 256K words of 32 bits each. A binary instruction code is stored in one word of memory. The instruction has four parts: an indirect bit, an operation code, a register code part to specify one of 64 registers, and an address part. **07**
1. How many bits are there in operation code, the register code part, and the address part?
 2. Draw the instruction word format and indicate the number of bits in each part.
 3. How many bits are there in the data and address inputs of the memory?
- OR**
- (b)** Elaborate Flynn's classification for computers. **07**
- Q.3 (a)** Draw a flowchart for first pass of an assembler and explain the same in brief. **07**
- (b)** Write a note on microprogram sequencer. **07**
- OR**
- Q.3 (a)** What is meant by addressing modes? List and explain any five addressing modes by taking proper example(s). **07**
- (b)** Discuss four-segment instruction pipeline with diagram(s). **07**
- Q.4 (a)** Explain Booth multiplication algorithm for multiplying binary integers in signed 2's complement representation. **07**
- (b)** Write a detailed note on Direct Memory Access (DMA). **07**
- OR**
- Q.4 (a)** Write a brief note on: **07**
- Subroutine call and return
 - RISC
- (b)** Describe microprogrammed control organization in detail. **07**
- Q.5 (a)** Discuss associative mapping and direct mapping in organization of cache memory. **07**
- (b)** Explain addition and subtraction operations with signed 2's complement integer data. Support your answer by taking appropriate example(s). **07**

OR

- Q.5 (a)** What do you mean by address space and memory space in virtual memory? **07**
Also explain the relation between address space and memory space in virtual memory.
- (b)** Describe cache coherence problem and its solutions in detail. **07**
