

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-III Examination December 2009****Subject code: 130704****Subject Name: Computer Organization and Architecture****Date: 29 / 12 / 2009****Time: 11.00 am – 1.30 pm****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)** Answer the following questions. **07**
1. What is register transfer language? Clear it with example.
 2. Explain the operation of three state bus buffers and show its use in design of common bus.
- (b)** Explain the direct and indirect address with example and compare them. **07**
- Q.2 (a)** Draw the circuit for control unit of basic computer and explain its working. **07**
- (b)** What do you mean by completeness of instruction set? Give the reasons to choose the instructions in each category. **07**
- OR**
- (b)** Write a program loop using a pointer and a counter to clear the contents of hex locations 500 to 5FF with 0. **07**
- Q.3 (a)** Compare the following. **07**
1. Microprogrammed and hardwired control organization.
 2. Register reference and memory reference instructions.
- (b)** Describe the first pass of assembler with the help of flowchart and show how symbol table is generated using an example. **07**
- OR**
- Q.3 (a)** What is program interrupt? What happens when it comes? What are the tasks to be performed by service routine? **07**
- (b)** Describe the following terms with proper example in each case: micro operation, microinstruction, microprogram, microcode. **07**
- Q.4 (a)** What is stack? Give the organization of register stack with all necessary elements and explain the working of push and pop operations. **07**
- (b)** List the important characteristics of RISC architecture and explain the use of overlapped register windows. **07**
- OR**
- Q.4 (a)** What are the flag bits? Give the meaning of each and use of them in programming. **07**
- (b)** Explain the following. **07**
1. Data transfer instructions.
 2. Flynn's classification of computers.
- Q.5 (a)** What are the pipeline conflicts? Explain the hardware techniques to handle the branch instructions. **07**
- (b)** Multiply the (-8) with (12) using Booth's algorithm. Give each step. **07**
- OR**
- Q.5 (a)** Considering three segment instruction pipeline, illustrate the concepts of delayed load and delayed branch with example. **07**
- (b)** Explain the Booth's algorithm with the help of flowchart. **07**
