

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER- III EXAMINATION – SUMMER 2015****Subject code: 130704****Date: 27/05/2015****Subject Name: COMPUTER ORGANIZATION AND ARCHITECTURE****Time: 2:30 Pm-5:00 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) List and explain different types of shift microoperation. **07**
(b) What is register transfer language? Explain $R2 \leftarrow R1$ micro operation with block diagram and timing diagram. **07**
- Q.2** (a) Differentiate between register-reference instructions and memory-reference instructions with four instructions in each type. **07**
(b) Explain the Common Bus System with its diagram. **07**
- OR**
- (b) Design the combinational circuit for Common Bus system for four bit register using Multiplexer. **07**
- Q.3** (a) Draw the block diagram of control unit of basic computer. Explain in detail with control timing diagrams. **07**
(b) What is addressing mode? List and explain all addressing modes used in basic computer. **07**
- OR**
- Q.3** (a) What is stack? Give the organization of register stack with all necessary elements and explain the different operations of stack. **07**
(b) What are the main types of Interrupts? Explain each type in details. **07**
- Q.4** (a) Give the comparisons between RISC and CISC. **07**
(b) What is subroutine? Explain subroutine parameters and data linkage. **07**
- OR**
- Q.4** (a) What is assembler? Explain the different phases of assembler. **07**
(b) Explain address sequencing with block diagram. **07**
- Q.5** (a) What is Instruction Pipeline? Explain the Four-Segment Instruction Pipeline with the suitable diagram. **07**
(b) Multiply the (10) with (-6) using Booth's algorithm. Give each step in details. **07**
- OR**
- Q.5** (a) What is pipeline conflict? Explain data dependency and handling of branch instruction in detail. **07**
(b) Explain the Booth Multiplication Algorithm in detail. **07**
