Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

IV SEMESTER B.TECH. (INFORMATION TECHNOLOGY)

MAKEUP EXAMINATIONS, JUNE 2018

COMPUTER ORGANISATION AND MICROPROCESSOR SYSTEMS [ICT 2202]

REVISED CREDIT SYSTEM

(14/06/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data, if any, may be suitably assumed.

1A. Write the flow chart for restoring division algorithm. Perform division of $(1111)_2$ by $(100)_2$ using the same, indicating all the steps. **5**

1B. List various status flags of 8086 and explain with an example for each. **3**

1C. Write the steps performed by the 8086 microprocessor for the execution of TYPE 3 interrupt. **2**

2A. With necessary waveforms, explain various modes of operation of 8254. **5**

2B. Design the processing section of 4x4 Booth's multiplier. **3**

2C. Design a 4-bit general purpose register, according to the truth table given below. **2**

Control inputs		Operation
S_1	S_0	
0	0	Right shift
0	1	Left shift
1	0	Right rotate
1	1	Left rotate

3A. What are the different types of addressing modes in 8086? Explain with an example for each. **5**

3B. Write an 8086 assembly language program to count the number of 1's and 0's in a 16-bit number stored in the memory. Also store the count in the memory. **3**

3C. Explain the working of 8259 in cascading mode with a neat diagram. **2**

4A. Explain the following instructions with an example for each:
i. XCHG ii. CMPSW iii. DIV iv. SAHF v. TEST **5**

4B. Explain one bus, two bus and three bus oriented RALU. **3**

4C. Explain block transfer DMA technique. **2**

5A. What is the need of cache memory in computer system? Discuss the following cache mapping techniques: fully associative mapping, direct mapping and set associative mapping. **5**

5B. Explain the following pins of 8086 microprocessor:
i. $\overline{RD}$ ii. $\overline{TEST}$ iii. HLDA **3**

5C. Illustrate the difference between macro and procedure with an example. **2**