MANIPAL UNIVERSITY JAIPUR
SCHOOL OF COMPUTING AND IT
III Semester B.Tech - Second Sessional Examination- 2017-18
Branch: CSE / IT /CCE
CS1301-Computer Organization & Architecture
(OPEN BOOK examination)

Duration: 1 hour **Max. Marks: 15**

Instructions:

- All questions are compulsory.
- Missing data if any may be assumed suitably.
- Two Books (Spiral bound) and one handwritten notebook is allowed.

Q1. Perform the multiplication of 6-bit operands represented in 2's complement form, M = 000011 and Q = 100111 using Booth algorithm and bit-pair recoding method. [3]

Q2. Perform 10111 ÷ 1011 by non-restoring division algorithm. [2]

Q3. Perform multiplication of 15 × 23 using carry-save addition of summands method. Also calculate minimum gate delay required to perform multiplication of 8-bit operands using the above method. [3]

Q4. Consider that floating point numbers are represented in a 14 bit format with a 6-bit, excess-31 exponent. The 7-bit mantissa is normalized as in the IEEE format, with an implied 1 to the left of the binary point. Represent the numbers A = 25.5 and B = 1.5 in the above format.
Also perform A + B and A × B, using arithmetic operation rules on floating-point numbers. [4]

Q5. A computer system has a main memory consisting of 1 G 16-bit words. It also has 16K word cache organized in the block-set-associative manner, with 4 blocks per set and 64 words per block. How many bits will be used to specify TAG, SET and WORD fields? [3]