Midterm #1

General Information

- Date: Wednesday, October 24th, 2018
- Duration: 60 minutes
- Total marks: 20

Instructions and Guidelines

- No books or notes are permitted.
- Computer usage is prohibited.
- Cell phones must be turned off.
- Calculators are not allowed.
- Try to answer all questions.
- Write down your answers neatly in this booklet.
- To earn partial marks, justify your answers.
- If you need extra paper, request some from a proctor.

Grading

Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	**Total**
Points	/2	/2	/1	/2	/2	/2	/2	/3	/3	/1	**/20**

Student Name: .....

ID Number: .....

Q1 [2 Points]

Convert 44.375_{10} to binary.

Q2 [2 Points]

Convert 725_{8} to hexadecimal.

Q3 [1 Point]

Convert 985_{10} to BCD.

Q4 [2 Points]

Convert the Gray code 10110010 to binary.

Q5 [2 Points]

Express 0.00011001_2 in the single-precision floating-point format.

Q6 [2 Points]

Convert the sign-magnitude number 1011011110 to the 1's complement form.

Q7 [2 Points]

Subtract the following BCD numbers:

$$\begin{array}{r} 0\ 1\ 0\ 1\ 0\ 0\ 1\ 0 \\ -\ 0\ 0\ 1\ 1\ 1\ 0\ 0\ 1 \\ \hline \end{array}$$

Q8 [3 Points]

Divide the following unsigned binary numbers:

$$1\ 0\ 1\ 1 \overline{)\ 1\ 0\ 0\ 1\ 0\ 1\ 0\ 1}$$

Q9 [3 Points]

Multiply the following 2's complement numbers:

$$\begin{array}{r} 0\ 1\ 1\ 0\ 1 \\ \times\ 1\ 0\ 1\ 0\ 1 \\ \hline \end{array}$$

Q10 [1 Point]

Determine which of the following odd parity codes are in error (if any): (a) 10101101 and (b) 1111101011. Justify your answer to get the full marks.