PART I:

Question	Total Mark	Your Mark
Q1	5	
Q2	8	
Q3	7	
Subtotal	**20**	

Q1: History of computing (5 points)

1. Assign each one of the following terms a number (1, 2, 3, 4 or 5) to indicate the hardware or software generation it belongs to **(2.5 points)**

Term	Generation
Card readers	**1**
Appearance of two types of programmers	**1**
Integrated circuits	**3**
Java	**5**
Magnetic disks	**2**
Workstations	**4**
COBOL and Lisp	**2**
Operating Systems	**3**
Separation between users and hardware	**3**
Apple, Sun and Dell	**4**

2. Is computing a mathematical discipline, a scientific discipline, or an engineering discipline? Explain? **(1.5 points)**

Computing is mathematical, scientific and also engineering discipline. It has its roots in mathematical logic including Boolean algebra and numerical analysis. It is a scientific discipline as we build and test models of natural phenomena. As we design and build larger and larger computing systems, computing is also an engineering discipline

3. What is the difference between an assembler and a compiler? **(1 point)**

An assembler translates assembly language code to machine language while a compiler translates high-level languages code to the machine language.

Name: ……..	ID: ……..……	Section: …….

Q2: Conversions, arithmetic and representation of numbers: (8 points)

1. Convert the following hexadecimal number to decimal: A4B **(1.5 points)**

10*16*16 + 16*4 +11 = **2635**

2. Convert the following octal number to binary: 7263 **(1 point)**

Grouping: 7: 111 2: 010 6: 110 3: 011

111 010 110 011

3. Convert the following decimal number to base 6: 128 **(1.5 points)**

128/6 = 21, 2

21/6 = 3, 3

3/6 = 0, 3

322

4. What is the two's complement representation of -12 if 5 binary digits are used to represent the numbers. **(1.5 points)**

-12 = 2^5 – 12 = 20 ➔convert 20 to binary to get the answer: **10100**

Name: ……..	ID: ……..……	Section: …….

5. Perform the following binary addition: 10110 + 1110 **(1 points)**
100100
6. Perform the following octal subtraction: 1234 - 765 **(1.5 points)**
247

Q2: Data representation: (7 points)

1. The ____ **compression ratio** ___ is defined as the size of the compressed data divided by the size of the original data.
2. Three bits can represent up to _____ **8** _____ unique things.
3. When representing numbers using ____**signed magnitude** ____, there are two representations for zero.
4. _____ **Overflow** _____ occurs when a calculated value cannot fit into the number of digits reserved for it.
5. The decimal point in a number, when working in other bases, is called the ___ **radix**_____ point.
6. A ____ **character set** ___ is a list of characters and the codes used to represent each one.
7. The extended ____ **ASCII** _____ character set contains 256 characters that support English but is not suited for international use.
8. ___ **Sampling** ____ is the process of periodically measuring the voltage of an audio signal.
9. An __ **RGB** _____ represents a color using three numbers that represent the relative contributions of three primary colors.
10. ____ **Color depth** _____ is the amount of data used to represent a color.
11. ____ **Resolution** _____ refers to the number of pixels used to represent a picture
12. A __ **raster graphics** _____ stores image information on a pixel-by-pixel basis.
13. ___ **Spatial** ____ compression removes redundant information within each frame of a video.
14. A video ____**DODEC** _____ represents the methods used to compress the size of a movie clip.