H2 Computing : Check Point 9

C3 Data Representation (20 marks)

Name : _____ Class : _____ Date : 25/26 July 2019

1. Convert 174_{10} to binary, hexadecimal, octal and base-5 representations. (4 marks)

Binary	Hexadecimal	Octal	Base-5

2. Convert 3064_{7} to denary. (2 marks)

3. Covert 110101111011_{2} to hexadecimal. (2 marks)

4. The 48 bits MAC address of a Network Interface Controller (NIC) is given as

   `11111010 00101011 00110111 01101000 00000001 00000001`

   and it is commonly represented in hexadecimal as `FA-2B-37-68-01-01`.

   Represent this MAC address using the base-8 or Octal Number System. (2 marks)

5. The following table shows a partial list of Unicode characters, represented in UTF-16 using hexadecimal.

Unicode	Character	Denary Value	Description
U+**03B1**	α	945	Greek Small Letter Alpha
U+**03B2**	β	946	Greek Small Letter Beta
U+**03B3**	γ	947	Greek Small Letter Gamma
U+**03B4**	δ	948	Greek Small Letter Delta
U+**03B5**	ε	949	Greek Small Letter Epsilon
U+**03B6**	ζ	950	Greek Small Letter Zeta
U+**03B7**	η	951	Greek Small Letter Eta
U+**03B8**	θ	952	Greek Small Letter Theta

(a) Explain why the Unicode encoding system has replaced ASCII. (2 marks)

(b) The Greek capital letter Omega, 'Ω', has denary value 937. Write down its corresponding Unicode. (1 mark)

(c) Write down the 16-bit binary value of the Unicode character ☺ with Unicode U+**263A**. (1 marks)

6. In the unknown world of the ancient past, the natives in a tribe do their counting with only ←, ↑ , → and ↓. Fill in the following blanks for the respective Tribal Numeric and Denary. (6 marks)

Tribal Numeric	Denary
←	0
↑	1
→	2
↓	3
	4
	5
	6
	7
	8
	9
…	…
	44
…	…
	109
…	…
→←↓↑	