Question	Part	Marking guidance	Total marks
01	1	**Mark is for AO2 (apply)** 11000; **I.** leading zeroes	1

| 01 | 2 | **Mark is for AO2 (apply)**

It multiplies the number by 8//by two three times// by 2^3// multiply by 1000_2;

NE It multiplies the number | 1 |

| 01 | 3 | **Mark is for AO2 (apply)**

It will halve the number//Divide the number by two; | 1 |

Qu	Part	Marking guidance	Total marks
02	1	**2 marks for AO2 (apply)** The first value of result 16; The last value of result 12; Max 1 mark if more than two values are given for result. The correct table is as follows: 	result
---
16
12
		2

Qu	Part	Marking guidance	Total marks
03		**2 marks for AO2 (apply)** 10101010;; One mark if the right hand side 4 bits are correct (1010) One mark if the left hand side 4 bits are correct (1010)	2

Qu	Part	Marking guidance	Total marks
04	1	**2 marks for AO2 (apply)** Marks should be awarded as follows: • the right hand side 2 bits are correct (10); • the answer is fully correct (11011010);	2

Qu	Part	Marking guidance	Total marks
04	2	**Mark is for AO2 (apply)** One mark for the correct answer only; | 1	1	1	0	0	1	0	0		1

Qu	Part	Marking guidance	Total marks
05	1	**2 marks for AO2 (apply)** `1110; 1001;`	2

Qu	Part	Marking guidance	Total marks
05	2	**Mark is for AO2 (apply)** `00010101;`	1

Qu	Part	Marking guidance	Total marks
05	3	**Mark is for AO1 (understanding)** The (binary) number is multiplied by 16 // 2^4 ; **Note for examiners:** equivalent arithmetic methods should be credited.	1

Qu	Part	Marking guidance	Total marks
05	4	**Mark is for AO1 (understanding)** To divide by 4 // quarter the number // multiplies by 8 then divides by 32; **Note for examiners:** equivalent arithmetic methods should be credited.	1

Qu	Part	Marking guidance	Total marks
06		**2 marks for AO2 (apply)** 10111; 100;	2

Qu	Part	Marking guidance	Total marks
07		**Mark is for AO1 (understanding)** (Shift the number) two (binary) places / bits to the right;	1

Qu	Part	Marking guidance	Total marks
08	4	**All marks AO1 (understanding)** (Shifting the bit pattern) three places; to the left; **Mark as follows:** **1 mark:** for correct direction of shift **1 mark:** for correct number of times to shift	2

Question	Part	Marking guidance	Total marks
09		**2 marks for AO2 (apply)** `11010; 101;`	2

Question	Part	Marking guidance	Total marks
10	**1**	**Mark is for AO2 (apply)** `11001100`;	1

Question	Part	Marking guidance	Total marks
10	**2**	**Mark is for AO2 (apply)** 102;	1

Question	Part	Marking guidance	Total marks
10	**3**	**Mark is for AO2 (apply)** **D** Multiply or divide numbers by powers of two; **R**. if more than one lozenge shaded	1