MODULE C DATA REPRESENTATION · C3

Hexadecimal: mark scheme

21 marks · OCR J277 spec 1.2.4

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative words; **//** separates alternative answers for the same mark. Words in (brackets) are not needed. Ignore case in hex. Ignore leading 0s unless stated. A correct final answer with no working gets full marks, including where "Show your working" is asked: the working mark credits a correct method when the final answer is wrong.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.2.4	16	**1**	Accept "0 to 9 and A to F". Do not accept 15.
1(b) J277 1.2.4	12	**1**	Correct answer only (A = 10, B = 11, C = 12).
1(c) J277 1.2.4	FF 255	**2**	1 mark each. 15 × 16 + 15 = 255. Do not accept 256.
2(a) J277 1.2.4	4B	**1**	75 ÷ 16 = 4 remainder 11; 11 = B. Do not accept B4 (reversed) or 411.
2(b) J277 1.2.4	160 ÷ 16 = 10 remainder 0 // 10 × 16 = 160 // 10 = A A0	**2**	1 mark working, 1 mark answer. Do not accept A, 0A or 100: the trailing 0 must be there (a common error in OCR examiners' reports). Working mark can be given when the answer is wrong.
2(c) J277 1.2.4	0D	**1**	Accept D (leading 0). Do not accept D0 or 13.
3(a) J277 1.2.4	46	**1**	2 × 16 = 32; E = 14; 32 + 14 = 46.
3(b) J277 1.2.4	B = 11 and 11 × 16 = 176 // 176 + 7 183	**2**	1 mark working, 1 mark answer. 176 + 7 = 183. Do not accept 117 (11 and 7 written side by side).
3(c) J277 1.2.4	240	**1**	15 × 16 + 0 = 240. Do not accept 15.

QUESTION	ANSWER	MARKS	GUIDANCE
4(a) J277 1.2.4	100 → 64 30 → 1E 9C → 156 50 → 80	**4**	1 mark per row. 6 × 16 + 4 = 100; 1 × 16 + 14 = 30; 9 × 16 + 12 = 156; 5 × 16 + 0 = 80. Do not accept E1 (reversed), or 50 in the last row.

5(a)
J277 1.2.4
	The left digit is worth 16s / column values are 16 and 1 // multiply the left digit by 16: 3 × 16 = 48
	D = 13 // add the value of the right (units) digit, 13
	48 + 13 = 61
		3	1 mark per bullet. Allow a method via binary: each digit to a 4-bit nibble (0011 1101) for 1 mark, add the binary place values for 1 mark, 61 for 1 mark. 61 with no description = 1 mark only (the question asks to describe).

6(a) J277 1.2.4	196	**1**	C = 12; 12 × 16 + 4 = 196. Do not accept 124.
6(b) J277 1.2.4	3A	**1**	58 ÷ 16 = 3 remainder 10; 10 = A. Do not accept A3 (reversed) or 310.

Total: 21 marks