GCSE MARKING SCHEME

SUMMER 2018

ELECTRONICS - E2
4162/01

INTRODUCTION

This marking scheme was used by WJEC for the 2018 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

Question	Part	Answer
1	a	Mono - 'B'- 1 mark Astable - 'A'- 1 mark Latch - 'D'- 1 mark
	b	Answer 'B' - 1 mark
	c	Answer 'B' - 1 mark
2	a	(i) 'A' and 'D' - 1 mark (ii) 'A' and 'C' - 1 mark
	b	'0.1' - 1 mark
3	a	0 / 1 / 1 / 0 / 1 / 1 / 1 All correct - 1 mark
	b i	'B' - 1 mark
	b ii	'A' – 1 mark
4		TSU = 'Analogue' - 1 mark Switch = 'Digital' - 1 mark Schmitt = 'Digital' - 1 mark Logic gate = 'Digital' - 1 mark
5	a	'C' = 1 mark
	b	'Pulse 1' - Off/On/Off/Off AND 'Pulse 2' - Off/Off/On/Off All correct - 1 mark 'Pulse 3' - Off/Off/Off/On AND 'Pulse 4' - On/Off/Off/Off All correct - 1 mark
6	a /b	*(a)* Answer = 'C' - 1 mark *(b)* Answer = 'A' - 1 mark
7	a	Answer = 'B' - 1 mark
	b	Q output toggles on rising edges, exclusivel - 1 mark Correct initial setting - 1 mark Q bar opposite to Q - 1 mark
8	a	Q_B toggles on falling edges, exclusively - 1 mark
	b	Output = '10' - 1 mark
9		A - Is switch P (or Q) on? B - Is switch Q (or P) on? C - Switch lamp on D - Wait 10s E - Switch lamp off All five correct - 4 marks Any four correct - 3 marks Any three correct - 2 mark Any two correct - 1 mark
10	a	Answer = 'B' - 1 mark
	b	Answer = 'B' - 1 mark
11	a	(i) Answer = 'E' - 1 mark (ii) Answer = 'D' - 1 mark (iii) Answer = 'B' - 1 mark
	b	(i) Answer = 'C' - 1 mark (ii) Answer = '-1.0' - 1 mark
12	a	*(a)* = '10' - 1 mark
	b	*(b)* = '-12' - 1 mark
	c	*(c)* = '60.0' - 1 mark
13	a	(a) = '3' - 1 mark
	b	(b) = '4' - 1 mark
	c	(c) = '2' - 1 mark

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14	a	(*a*) = NOT - 1 mark
	b	(*b*) = NAND - 1 mark
	c	Pulse 0 - 1 mark Pulse 2 - 1 mark
	d	(*d*) = AND - 1 mark
15		Correct 1/0 transition - 1 mark Correct 0/1 transition - 1 mark Correct logic - 1 mark 2 correct voltage levels - 1 mark
16	a	Amplitude = 3.0V - 1 mark Phase = non-inverted - 1 mark
	b	A = horizontal wire - 1 mark B = 110 $k\Omega$ resistor - 1 mark C = 10 $k\Omega$ resistor - 1 mark Incorrect gain - subtract 1 mark
17	a	'10'mA - 1 mark
	b	(i) '6.0'V - 1 mark (ii) '6.7'V - 1 mark (or answer to (i) + 0.7)