VELOCITY DISPLACEMENT ACCELERATION 2 MS

QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	longer reaction time or greater thinking distance or greater stopping distance		1
a)ii)	lines / slopes have the same gradient or velocity decreases to zero in same time / in 2.6 seconds	accept slopes are the same accept any time between 2.3 and 2.8 accept braking distances are the same	1
a)iii)	12	accept extracting both reaction times correctly for 1 mark (0.6 and 1.4) or time = 0.8(s) for 1 mark accept 0.8 × 15 for 2 marks accept calculating the distance travelled by car A as 28.5 m or the distance travelled by car B as 40.5 m for 2 marks	3
b)	Z different force values give a unique / different resistance	only scores if Z chosen do not accept force and resistance are (directly) proportional accept answers in terms of why either X or Y would not be the best eg X – same resistance value is obtained for 2 different	1 1

		force values Y – all force values give the same resistance	
Total marks			7

QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	48	allow for 1 mark correct method shown, ie 6 × 8 or correct area indicated on the graph	2
b)	diagonal line from (0,0) to (6,48) / (6, their (a)) horizontal line at 48m between 6 and 10 seconds	if answer to (a) is greater than 50, scale must be changed to gain this mark accept horizontal line drawn at their (a) between 6 and 10 seconds	1

1 |
| Total marks | | | 4 |

QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	12		1
a)ii)	0.2

m/s2 | allow 1 mark for their (a)(i) ÷ 60 and correctly calculated accept correct unit circled in list accept ms-2 do not accept mps2 | 1

1 |
| b) | B | | 1 |
| Total marks | | | 4 |

QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	more streamlined air resistance is smaller (for same speed) so reaches a higher speed (before resultant force is 0)	accept decrease surface area accept drag for air resistance friction is insufficient ignore reference to mass	3
b)i)	1.7	allow 1 mark for correct method, ie 5/3 or allow 1 mark for an answer with more than 2 sig figs that rounds to 1.7 or allow 1 mark for an answer of 17	2
b)ii)	7.5	allow 1 mark for correct use of graph, eg 1/2 ×5×3	2
b)iii)	air (resistance)	accept wind (resistance) drag is insufficient friction is insufficient	1
Total marks			8

QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS

a)		if more than one line is drawn from a graph then all those lines are wrong allow 1 mark for 1 correct line	2
b)	speed		1
c)i)	2.25	allow 1 mark for correct substitution i.e. $a = \dfrac{9-0}{4}$ or $a = 9/4$	2
c)ii)	The air resistance increases		1
d)	2000 J mass is half or kinetic energy depends on mass	do not accept weight for mass	1 1
Total marks			8