Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	

AQA

General Certificate of Education
Advanced Subsidiary Examination
June 2014

Mathematics MPC1

Unit Pure Core 1

Monday 19 May 2014 9.00 am to 10.30 am

For this paper you must have:
- the blue AQA booklet of formulae and statistical tables.

You must **not** use a calculator.

Time allowed
- 1 hour 30 minutes

Instructions
- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Write the question part reference (eg (a), (b)(i) etc) in the left-hand margin.
- You must answer each question in the space provided for that question. If you require extra space, use an AQA supplementary answer book; do **not** use the space provided for a different question.
- Do not write outside the box around each page.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- The use of calculators is **not** permitted.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 75.

Advice
- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily need to use all the space provided.

Answer **all** questions.

Answer each question in the space provided for that question.

1 The point A has coordinates $(-1,\ 2)$ and the point B has coordinates $(3,\ -5)$.

(a) (i) Find the gradient of AB.

[2 marks]

(ii) Hence find an equation of the line AB, giving your answer in the form $px + qy = r$, where p, q and r are integers.

[3 marks]

(b) The midpoint of AB is M.

(i) Find the coordinates of M.

[1 mark]

(ii) Find an equation of the line which passes through M and which is perpendicular to AB.

[3 marks]

(c) The point C has coordinates $(k,\ 2k+3)$. Given that the distance from A to C is $\sqrt{13}$, find the two possible values of the constant k.

[4 marks]

QUESTION PART REFERENCE

Answer space for question 1

2 A rectangle has length $(9 + 5\sqrt{3})\,\text{cm}$ and area $(15 + 7\sqrt{3})\,\text{cm}^2$.

Find the width of the rectangle, giving your answer in the form $(m + n\sqrt{3})\,\text{cm}$, where m and n are integers.

[4 marks]

QUESTION PART REFERENCE

Answer space for question 2

3 A curve has equation $y = 2x^5 + 5x^4 - 1$.

(a) Find:

(i) $\dfrac{\mathrm{d}y}{\mathrm{d}x}$

[2 marks]

(ii) $\dfrac{\mathrm{d}^2y}{\mathrm{d}x^2}$

[1 mark]

(b) The point on the curve where $x = -1$ is P.

(i) Determine whether y is increasing or decreasing at P, giving a reason for your answer.

[2 marks]

(ii) Find an equation of the tangent to the curve at P.

[3 marks]

(c) The point $Q(-2,\ 15)$ also lies on the curve. Verify that Q is a maximum point of the curve.

[4 marks]

QUESTION PART REFERENCE

Answer space for question 3

Do not write outside the box

4 (a) (i) Express $16 - 6x - x^2$ in the form $p - (x + q)^2$ where p and q are integers.

[2 marks]

(ii) Hence write down the maximum value of $16 - 6x - x^2$.

[1 mark]

(b) (i) Factorise $16 - 6x - x^2$.

[1 mark]

(ii) Sketch the curve with equation $y = 16 - 6x - x^2$, stating the values of x where the curve crosses the x-axis and the value of the y-intercept.

[3 marks]

QUESTION PART REFERENCE

Answer space for question 4

5 The polynomial $\mathrm{p}(x)$ is given by

$$\mathrm{p}(x) = x^3 + cx^2 + dx + 3$$

where c and d are integers.

(a) Given that $x + 3$ is a factor of $\mathrm{p}(x)$, show that

$$3c - d = 8$$

[2 marks]

(b) The remainder when $\mathrm{p}(x)$ is divided by $x - 2$ is 65.

Obtain a further equation in c and d.

[2 marks]

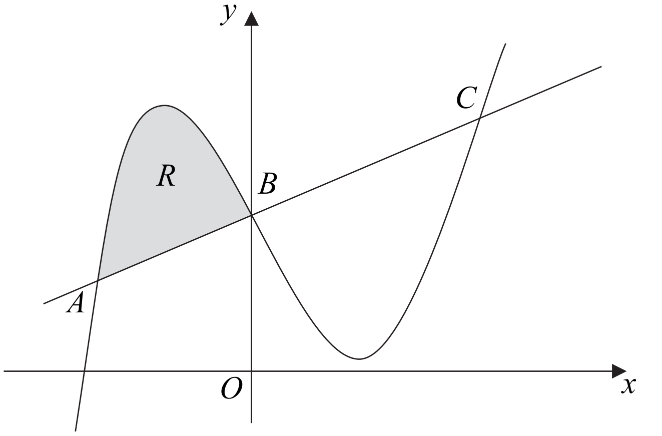
(c) Use the equations from parts **(a)** and **(b)** to find the value of c and the value of d.

[3 marks]

QUESTION PART REFERENCE

Answer space for question 5

6 The diagram shows a curve and a line which intersect at the points A, B and C.



The curve has equation $y = x^3 - x^2 - 5x + 7$ and the straight line has equation $y = x + 7$. The point B has coordinates $(0, 7)$.

(a) (i) Show that the x-coordinates of the points A and C satisfy the equation

$$x^2 - x - 6 = 0$$

[2 marks]

(ii) Find the coordinates of the points A and C.

[3 marks]

(b) Find $\int (x^3 - x^2 - 5x + 7)\,\mathrm{d}x$.

[3 marks]

(c) Find the area of the shaded region R bounded by the curve and the line segment AB.

[4 marks]

QUESTION PART REFERENCE | **Answer space for question 6**

7 A circle with centre C has equation $x^2 + y^2 - 10x + 12y + 41 = 0$. The point $A(3, -2)$ lies on the circle.

(a) Express the equation of the circle in the form

$$(x-a)^2 + (y-b)^2 = k$$

[3 marks]

(b) (i) Write down the coordinates of C.

[1 mark]

(ii) Show that the circle has radius $n\sqrt{5}$, where n is an integer.

[2 marks]

(c) Find the equation of the tangent to the circle at the point A, giving your answer in the form $x + py = q$, where p and q are integers.

[5 marks]

(d) The point B lies on the tangent to the circle at A and the length of BC is 6. Find the length of AB.

[3 marks]

QUESTION PART REFERENCE

Answer space for question 7

8 Solve the following inequalities:

(a) $3(1 - 2x) - 5(3x + 2) > 0$

[2 marks]

(b) $6x^2 \leqslant x + 12$

[4 marks]

QUESTION PART REFERENCE

Answer space for question 8

Key to mark scheme abbreviations

M	mark is for method
m or dM	mark is dependent on one or more M marks and is for method
A	mark is dependent on M or m marks and is for accuracy
B	mark is independent of M or m marks and is for method and accuracy
E	mark is for explanation
√or ft or F	follow through from previous incorrect result
CAO	correct answer only
CSO	correct solution only
AWFW	anything which falls within
AWRT	anything which rounds to
ACF	any correct form
AG	answer given
SC	special case
OE	or equivalent
A2,1	2 or 1 (or 0) accuracy marks
$-x$ EE	deduct x marks for each error
NMS	no method shown
PI	possibly implied
SCA	substantially correct approach
c	candidate
sf	significant figure(s)
dp	decimal place(s)

No Method Shown

Where the question specifically requires a particular method to be used, we must usually see evidence of use of this method for any marks to be awarded.

Where the answer can be reasonably obtained without showing working and it is very unlikely that the correct answer can be obtained by using an incorrect method, we must award **full marks**. However, the obvious penalty to candidates showing no working is that incorrect answers, however close, earn **no marks**.

Where a question asks the candidate to state or write down a result, no method need be shown for full marks.

Where the permitted calculator has functions which reasonably allow the solution of the question directly, the correct answer without working earns **full marks**, unless it is given to less than the degree of accuracy accepted in the mark scheme, when it gains **no marks**.

Otherwise we require evidence of a correct method for any marks to be awarded.

Q	Solution	Mark	Total	Comment
1 (a)(i)	Grad $AB = \frac{-5-2}{3--1}$ OE	M1		correct unsimplified eg $\frac{2--5}{-1-3}$
	$= -\frac{7}{4}$	A1	2	
(ii)	$y--5 = \text{'their grad'}\ (x-3)$ $y-2 = \text{'their grad'}\ (x--1)$	M1		either pair of coordinates used correctly and attempt to find c if using $y=mx+c$
	$y-2=-\frac{7}{4}(x+1)$ $y+5=-\frac{7}{4}(x-3)$ $y=-\frac{7}{4}x+\frac{1}{4}$	A1		OE, any form of correct equation with – – simplified to +
	$7x+4y=1$	A1	3	integer coefficients & in this form
(b)(i)	$(M)\quad(1,-1.5)$	B1	1	condone $x=1,\ y=-\frac{3}{2}$
(ii)	Perp grad = $\frac{4}{7}$	B1√		perp grad = –1/ 'their' grad AB
	$y--\frac{3}{2}=\text{'their'}\frac{4}{7}(x-1)$	M1		ft 'their M' but must have attempted perpendicular gradient
	$y+\frac{3}{2}=\frac{4}{7}(x-1)$	A1	3	**any** correct form with – – simplified to + eg $8x-14y=29$; $y=\frac{4}{7}x+c,\ c=-\frac{29}{14}$
(c)	$(AC^2=)\quad(k--1)^2+(2k+3-2)^2$	M1		$(k+1)^2+(2k+1)^2$
	$k^2+2k+1+4k^2+4k+1=13$ $5k^2+6k-11=0$	A1		
	$(5k+11)(k-1)=0$	A1		correct factors or correct use of formula as far as $\frac{-6\pm\sqrt{256}}{10}$
	$\Rightarrow k=1,\quad k=-\frac{11}{5}$	A1	4	
	Total		13	

(a) (i) **NMS** grad $AB = -\frac{7}{4}$ earns 2 marks.

(ii) must simplify $y--5$ to $y+5$ or $x--1$ to $x+1$ for first **A1**

Condone $8y+14x=2$ etc for final **A1**, but not $7x+4y-1=0$ etc

(b)(ii) If their gradient of AB is m, then use of $-m$ or $1/m$ can earn **M1** . For **A1**, $1/\left(\frac{7}{4}\right)$, $\frac{14.5}{7}$ etc must be simplified.

Q	Solution	Mark	Total	Comment
2	$\frac{15+7\sqrt{3}}{9+5\sqrt{3}}\times\frac{9-5\sqrt{3}}{9-5\sqrt{3}}$	M1		writing correct quotient and multiplying by correct conjugate of denominator
	(Numerator =) $135-75\sqrt{3}+63\sqrt{3}-105$	A1		$30-12\sqrt{3}$
	(Denominator = $81-45\sqrt{3}+45\sqrt{3}-75$) $=6$	B1		must be seen as denominator
	$\left(\frac{30-12\sqrt{3}}{6}=\right)$ $5-2\sqrt{3}$	A1cso	4	units (cm) need not be given
	Alternative $(9+5\sqrt{3})(m+n\sqrt{3})$			
	$=9m+15n+5m\sqrt{3}+9n\sqrt{3}$	(M1)		must be correct
	$9m+15n=15,\quad 5m+9n=7$	(A1)		both equations correct
	$m=5\quad,\quad n=-2$	(A1)		either correct
	$5-2\sqrt{3}$	(A1)		
	Total		4	

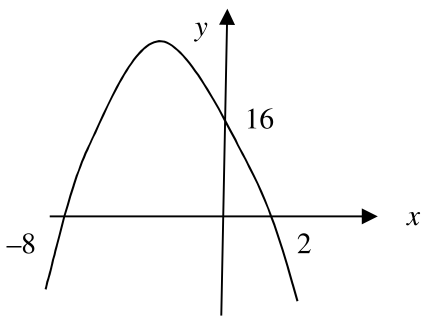
No marks if candidate uses $\frac{9+5\sqrt{3}}{15+7\sqrt{3}}$

Condone multiplication by $9-5\sqrt{3}$ instead of $\frac{9-5\sqrt{3}}{9-5\sqrt{3}}$ for **M1 only if** subsequent working shows multiplication by **both** numerator and denominator – otherwise **M0**.

May use alternative conjugate $\frac{15+7\sqrt{3}}{9+5\sqrt{3}}\times\frac{5\sqrt{3}-9}{5\sqrt{3}-9}$ **M1** numerator $=12\sqrt{3}-30$ **A1** denominator = –6 **B1**

Ignore any incorrect units

Q	Solution	Mark	Total	Comment
3 (a)(i)	$\left(\frac{dy}{dx}=\right)$ $10x^4+20x^3$	M1 A1	2	one term correct all correct (no $+c$ etc)
(ii)	$\left(\frac{d^2y}{dx^2}=\right)$ $40x^3+60x^2$	B1√	1	ft their $\frac{dy}{dx}$
(b)(i)	$\left(\frac{dy}{dx}=\right)$ $10-20 \quad =-10$	B1√		correctly sub $x=-1$ into their $\frac{dy}{dx}$ and evaluated correctly
	$\frac{dy}{dx}<0$ (therefore y is) decreasing	E1√	2	Must state "decreasing" **and** $\frac{dy}{dx}<0$ ft 'therefore y is increasing' **and** reason if their value of $\frac{dy}{dx}>0$
(ii)	(When $x=-1$) $y=2$	B1		
	$y-'their'2='their\ grad'(x--1)$ but must be tangent and not normal	M1		ft ' their' value of $\frac{dy}{dx}$ when $x=-1$ and ' their' y-coordinate
	$y-2=-10(x+1)$ *or* $y=-10x-8$ etc	A1	3	any correct tangent eqn from correct $\frac{dy}{dx}$
(c)	$\left(\frac{dy}{dx}=\right)$ $10(-2)^4+20(-2)^3$	M1		correctly sub $x=-2$ into their $\frac{dy}{dx}$
	$=160-160=0 \Rightarrow$ **stationary** point (when $x=-2$)	A1		correctly shown that $\frac{dy}{dx}=0$ **plus** correct statement
	$\left(\frac{d^2y}{dx^2}=\right)$ $40(-2)^3+60(-2)^2$	M1		correctly sub $x=-2$ into their $\frac{d^2y}{dx^2}$ or other suitable test for max/min
	$=-320+240=-80<0$ (Therefore) **maximum** (point at Q)	A1	4	**either** $\frac{d^2y}{dx^2}=-320+240<0$ **or** $\frac{d^2y}{dx^2}=-80<0$ **plus** conclusion
	Total		12	
(b) (i)	Accept "gradient is negative so decreasing" for **E1** Do **not** accept "because **it** is negative" or "$\frac{dy}{dx}=-10$" as reasons for **E1**			
(ii)	May earn **M1** for attempt to find c using $y=mx+c$ if clearly finding tangent and not normal. Must simplify $x--1$ to $x+1$ for **A1**			
(c)	May write "their" $10x^4+20x^3=0$ and attempt to find x for first **M1** leading to "$x=-2$ …stationary pt" for **A1**			

Q	Solution	Mark	Total	Comment
4 (a)(i)	$k-(x+3)^2$	M1		or $x^2+6x-16=(x+3)^2-25$ or $q = 3$ stated
	$25-(x+3)^2$	A1	2	
(ii)	(Max value =) 25	B1√	1	ft their p
(b)(i)	$(8+x)(2-x)$	B1	1	
(ii)		M1		∩ shape
		A1		curve roughly symmetrical with max to left of y-axis, curve in all 4 quadrants **and** y-intercept 16 stated or marked on y-axis
	crosses x-axis at –8 and 2	B1	3	correct - stated or marked on x-axis
	Total		**7**	

(a)(i)	**Example** $16-(x+3)^2-9$ earns **M1**
(ii)	(–3, 25) scores **B0** since maximum value not identified Allow maximum given as " $y = 25$ "
(b)(i)	Condone $-(x-2)(x+8)$, $(x-2)(-x-8)$ etc
(ii)	Withhold **B1** if more than 2 intercepts

Q	Solution	Mark	Total	Comment
5 (a)	$(-3)^3 + c(-3)^2 + d(-3) + 3$	M1		p(–3) attempted
	$-27 + 9c - 3d + 3 = 0$			must see this line or equivalent, **and** must have = 0 on right or left before final result
	$\Rightarrow 3c - d = 8$	A1	2	**AG** be convinced
(b)	$2^3 + c \times 2^2 + d \times 2 + 3 = 65$	M1		p(2) attempted & … = 65
	$8 + 4c + 2d + 3 = 65$	A1	2	correct equation in any form simplifying powers of 2 eg $4c + 2d = 54$
(c)	$5c = 35$ *or* $10d = 130$ OE	M1		correct elimination of c or d using both $3c - d = 8$ and their equation from (b)
	$c = 7$	A1		
	$d = 13$	A1	3	
	Total		**7**	

(a) May use long division by $x + 3$ but must reach remainder term for **M1**
Condone missing brackets in p(–3) expression if recovered later as –27 +9c +… to earn **A1**

Treat parts **(b)** and **(c)** holistically

(b) May use long division by $x - 2$ as far as remainder and equate their remainder to 65 for **M1**

(c) **Example** $4c + 2(3c - 8) = 54$ earns **M1** for eliminating d if equation in part **(b)** is correct

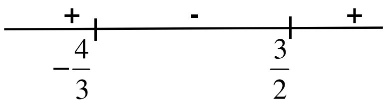
Q	Solution	Mark	Total	Comment
6 (a)(i)	$x^3 - x^2 - 5x + 7 = x + 7$	M1		
	$\Rightarrow x^3 - x^2 - 5x = x$ $(x \neq 0) \Rightarrow x^2 - x - 6 = 0$	A1	2	must see this line OE eg $x^3 - x^2 - 6x = 0$ AG
(ii)	$(x-3)(x+2)$	M1		correct
	$x = 3, \quad x = -2$	A1		both x values correct
	$A(-2,5)$ **and** $C(3,10)$	A1	3	both pairs of coordinates correct
(b)	$\frac{x^4}{4} - \frac{x^3}{3} - \frac{5x^2}{2} + 7x \quad (+c)$	M1 A1 A1	3	2 terms correct another term correct all correct
(c)	$\text{F}(-2) = \left[\frac{(-2)^4}{4} - \frac{(-2)^3}{3} - \frac{5(-2)^2}{2} + 7(-2)\right]$	M1		F('their'–2) correctly substituting into their answer to (b) , but must have scored M1 in part (b)
	F(0) – F(–2) = $0 - \left(\frac{16}{4} + \frac{8}{3} - \frac{20}{2} - 14\right) \quad = \frac{52}{3}$	A1		correct value using limits correctly
	Area of trapezium = $\left(\frac{1}{2}(5+7) \times 2\right) = 12$	B1		or rectangle plus triangle
	Area of $R = \frac{52}{3} - 12 = \frac{16}{3}$	A1	4	$5\frac{1}{3}$ or $5.\dot{3}$
	Total		**12**	

(a)(ii) **NMS either** $(-2,5)$ **or** $(3,10)$ scores **SC1** and **both correct** scores **SC3**
Allow "when $x = 3, \quad y = 10$ **and** when $x = -2, \quad y = 5$" instead of coordinates for final **A1**

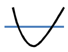
(c) Condone missing brackets around "their" –2 for **M1** and if recovered and correct on next line for **A1**
Area of trapezium found by integration $\int_{-2}^{0} (x+7)\,\text{d}x = \left[\frac{x^2}{2} + 7x\right]_{-2}^{0} = 12$ earns **B1**
Accept rounded answer of 5.3 etc after correct exact answer seen.

Q	Solution	Mark	Total	Comment
7 (a)	$(x-5)^2+(y--6)^2$	M1		one term correct
		A1		LHS correct with perhaps extra constant terms
	$(x-5)^2+(y+6)^2=20$	A1	3	equation completely correct
(b) (i)	$C(5,-6)$	B1√	1	correct or ft their **(a)**
(ii)	(radius =) $\sqrt{20}$	M1		correct or ft 'their' $\sqrt{k}$ provided RHS > 0
	$= 2\sqrt{5}$	A1	2	must see $\sqrt{20}$ **first**
(c)	Grad $AC = \dfrac{-6--2}{5-3}$ $(=-2)$	M1		correct unsimplified, ft their coords of C
	Grad of tangent $= \dfrac{1}{2}$	B1√		ft their $-1/$ grad AC
	Equation of tangent is $(y--2)="their\dfrac{1}{2}"(x-3)$	M1		clear attempt at **tangent** not normal through $(3,-2)$
	$y+2=\dfrac{1}{2}(x-3)$	A1		correct equation in any form but $y--2$ must be simplified to $y+2$
	$x-2y=7$	A1 cso	5	
(d)	$AB^2+(their\ \ r)^2=6^2$	M1		Pythagoras used with 6 as hypotenuse
	$d^2+20=36$ or $(AB^2)=36-20$	A1		values correct with $(2\sqrt{5})^2=20$ PI
	$AB^2=16$ Hence $AB=4$	A1cso	3	notation all correct
	Total		**14**	

(a)	$(x-5)^2+(y--6)^2=\left(\sqrt{20}\right)^2$ scores full marks If final equation is correct then award 3 marks, treating earlier lines with extra terms etc as rough working. If final equation has sign errors then check to see if M1 is earned. **Example** $(x-5)^2+(y+6)^2-25+36+41=0$ earns **M1 A1** but if this is part of preliminary working and final equation is offered as $(x-5)^2+(y+6)^2=20$ then award **M1 A1 A1.** **Example** $(x-5)^2+(y-6)^2=20$ earns **M1 A0 ; Example** $(x+5)^2+(y-6)^2=20$ earns **M0**
(b)(ii)	Candidates may still earn A1 here provided RHS of circle equation is 20. **Example** $(x+5)^2+(y-6)^2=20$ earns **M0** in **(a)** but can then earn **M1 A1** for radius = $\sqrt{20}=2\sqrt{5}$ **NMS** or no $\sqrt{20}$ seen; " radius $=2\sqrt{5}$ " scores **SC1** since question says "show that"
(c)	May earn second **M1** for attempt to find c using $y=mx+c$ if clearly finding tangent and not normal. If their gradient of AC is m, then use of $-m$ or $1/m$ with correct coordinates can earn second **M1**
(d)	**Example** $AB=36-(2\sqrt{5})^2=16=4$ scores **M1 A1 A0** for poor notation **NMS** $AB=4$ scores **SC1** since no evidence that exact value of radius has been used.

Q	Solution	Mark	Total	Comment
8 (a)	$3-6x-15x-10>0$	M1		Correctly multiplied out with >0
	$-21x>7$			
	$\Rightarrow x<-\frac{1}{3}$	A1cso	2	all working correct
(b)	$6x^2-x-12\leqslant 0$			
	$(3x+4)(2x-3)$	M1		correct factors or correct use of formula as far as $\frac{1\pm\sqrt{289}}{12}$
	CVs are $-\frac{4}{3}$, $\frac{3}{2}$	A1		
		M1		use of sign diagram or graph with CVs clearly shown
	$-\frac{4}{3}\leqslant x\leqslant\frac{3}{2}$	A1	4	*or* $\frac{3}{2}\geqslant x\geqslant-\frac{4}{3}$
	Total		**6**	
	TOTAL		**75**	

(a) Allow final answer in form $-\frac{1}{3}>x$.

(b) For second **M1**, if critical values are correct then sign diagram or sketch  must be correct ***with correct CVs marked***.
However, if CVs are not correct then second **M1** can be earned for attempt at sketch or sign diagram but ***their CVs*** MUST be marked on the diagram or sketch.
Final **A1,** inequality must have x and no other letter.

Final answer of $x\leqslant\frac{3}{2}$ AND $x\geqslant-\frac{4}{3}$ (with or without working) scores 4 marks .

(A) $-\frac{4}{3}<x<\frac{3}{2}$ (B) $x\leqslant\frac{3}{2}$ OR $x\geqslant-\frac{4}{3}$ (C) $x\leqslant\frac{3}{2}$, $x\geqslant-\frac{4}{3}$ **(D)** $-\frac{4}{3}\leqslant k\leqslant\frac{3}{2}$
with or without working each score 3 marks (**SC3**)

Example NMS $\frac{4}{3}\leqslant x\leqslant\frac{3}{2}$ scores **M0** (since one CV is incorrect)

Example NMS $x<\frac{3}{2}$, $x<-\frac{4}{3}$ scores **M1 A1 M0** (since both CVs are correct)

Scaled mark unit grade boundaries - June 2014 exams

A-level

Code	Title	Maximum Scaled Mark	Scaled Mark Grade Boundaries and A* Conversion Points A*	A	B	C	D	E
LAW01	LAW UNIT 1	96	-	77	69	62	55	48
LAW02	LAW UNIT 2	94	-	72	63	54	45	37
LAW03	LAW UNIT 3	80	69	63	58	53	48	43
LAW04	LAW UNIT 4	85	71	64	58	53	48	43
MD01	MATHEMATICS UNIT MD01	75	-	61	55	50	45	40
MD02	MATHEMATICS UNIT MD02	75	69	63	57	52	47	42
MFP1	MATHEMATICS UNIT MFP1	75	-	55	48	41	35	29
MFP2	MATHEMATICS UNIT MFP2	75	63	56	49	43	37	31
MFP3	MATHEMATICS UNIT MFP3	75	65	60	55	50	45	41
MFP4	MATHEMATICS UNIT MFP4	75	70	66	59	53	47	41
MM03	MATHEMATICS UNIT MM03	75	71	68	61	54	47	40
MM04	MATHEMATICS UNIT MM04	75	68	61	53	45	38	31
MM05	MATHEMATICS UNIT MM05	75	67	59	51	43	35	27
MM1B	MATHEMATICS UNIT MM1B	75	-	53	46	40	34	28
MM2B	MATHEMATICS UNIT MM2B	75	68	62	55	48	41	35
MPC1	MATHEMATICS UNIT MPC1	75	-	62	56	50	44	38
MPC2	MATHEMATICS UNIT MPC2	75	-	55	49	43	37	32
MPC3	MATHEMATICS UNIT MPC3	75	65	59	53	47	41	36
MPC4	MATHEMATICS UNIT MPC4	75	59	54	49	44	39	34
MS03	MATHEMATICS UNIT MS03	75	68	62	55	48	41	35
MS04	MATHEMATICS UNIT MS04	75	67	60	52	44	37	30
MS1A	MATHEMATICS UNIT MS1A	100	-	85	75	66	57	48
MS1A/W	*MATHEMATICS UNIT MS1A - WRITTEN*	*75*		*65*				*38*
MS1A/C	*MATHEMATICS UNIT MS1A - COURSEWORK*	*25*		*20*				*10*