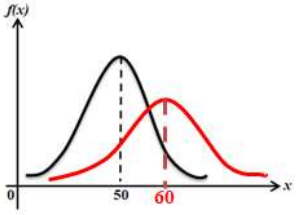
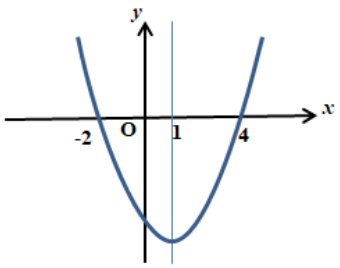
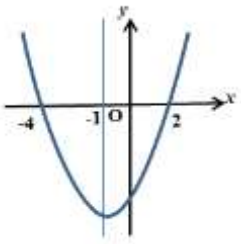
SKEMA PEMARKAHAN
PEPERIKSAAN PERCUBAAN SPM TAHUN 2021
ADDITIONAL MATHEMATICS KERTAS 1 (3472/1)

Disediakan oleh: Pn Kalaivani a/p Karuppiah

No.		Solution and Mark Scheme	Sub marks	Total marks
		Section A		
1.	a)	X={0, 1, 2, 3, 4, 5}	1	6
		Discrete	1	
		Integer, can be counted	1	
	b)		1,1,1	
		mean = 60, wider, shorter.		
2.		${}^{7}P_{4}$	1	3
		$\frac{{}^{7}P_{4}}{4}$	1	
		210	1	
3.	a)		1,1,1	7
	b)		1	
		y-intercept and minimum value remain the same(seen)	1	
		axis of symmetry changes from x=1 to x= -1	1	
		graph moves to the left	1	

4.	a)	$A + \delta A = \pi(r + \delta r)^2$ $\delta A = \pi r^2 + 2\pi r(\delta r) + \pi(\delta r)^2 - \pi r$ $\frac{\delta A}{\delta r} = 2\pi r + \pi\delta r$ $2\pi r$	1 1 1 1	7
	b)	$\frac{dA}{dt} = \frac{dA}{dr} \times \frac{dr}{dt}$ or $\frac{dA}{dr} = 12\pi$ $2\pi(6)$ x 2.5 30π or 94.26 or 94.25	1 1 1	
5.		fg(x) = x gf(x) = x fg =gf=x, hence $g(x) = f^{-1}(x)$	1 1 1	3
6.		$4(1-2\sin^2 x) + \sin x = -3$ $(8\sin x + 7)(\sin x - 1) = 0$ $x = 241.04^0, 298.96^0$ or 90^0 $x = 90^0, 241.04^0, 298.96^0$	1 1 1 1	4
7.	a)	$\frac{6}{2\sqrt{5} - \sqrt{2}} \times \frac{2\sqrt{5} + \sqrt{2}}{2\sqrt{5} + \sqrt{2}}$ $\frac{12\sqrt{5} + 6\sqrt{2}}{18}$ $\frac{2\sqrt{5} + \sqrt{2}}{3}$	1 1 1	7
	b)	$3^{2x+y} = 3^0$ or $2^{3x-2y} = 2^2$ $2x+y=0$ or $3x-2y=2$ $x = 2/7$ $y = -4/7$	1 1 1 1	
8.	a)	$a+6d=23$ or $a+7d=26$ $a=5$ and $d=3$ 44	1 1 1	7
	b)	$r=1.1$ $\frac{a(1.1^5-1)}{1.1-1} = 256414.20$ 42000/12 RM3500	1 1 1 1	
9.		$1/y = px^2 + q$ $p=2$ $5=2(1)+c$ or $9 = 2(3) + c$ $q=3$	1 1 1 1	4
10.	a)	$\overrightarrow{AB} = \overrightarrow{OB} - \overrightarrow{OA}$ or equivalent $\overrightarrow{AB} = \begin{pmatrix} -3 \\ 6 \end{pmatrix} - \begin{pmatrix} 2 \\ 5 \end{pmatrix}$ $\begin{pmatrix} -5 \\ 1 \end{pmatrix}$	1 1 1	6
	b)	$\sqrt{(-5)^2 + 1^2}$ $\sqrt{26}$ $\frac{1}{\sqrt{26}}\begin{pmatrix} -5 \\ 1 \end{pmatrix}$	1 1 1	

11.		$2r+r\theta=40$ $r^2\theta=200$ or $\frac{1}{2} r^2\theta=100$ $(\theta - 2)(\theta - 2) = 0$ (factorise/ solve quadratic equation) 2 radians	1 1 1 1	4
12.		$4q+10r=16$ $26q-17r=-19$ $82r=123$ $p=3/4$ $q=1/4$ $r=3/2$	1 1 1 1 1 1	6
		Section B		
13.	a)	$\frac{x-x_1}{x_2-x} = \frac{m}{n}$ or $\frac{y-y_1}{y_2-y} = \frac{m}{n}$ $nx - nx_1 = mx_2 - mx$ or $ny - ny_1 = my_2 - my$ $x(m+n) = nx_1 + mx_2$ or $y(m+n) = ny_1 + my_2$ $\frac{nx_1+mx_2}{m+n}$ and $\frac{ny_1+my_2}{m+n}$	1 1 1 1	8
	b)	$\frac{-12+2x}{3+2} = 2$ $\frac{-15+2y}{3+2} = -1$ x=11 or y=5 (11,5)	1 1 1 1	
14.	a)	$y=x^3-6x^2+9x+c$ $5=4^3-6(4)^2+9(4)+c$ $y=x^3-6x^2+9x+1$	1 1 1	8
	b)	x=1, 3 $d^2y/dx^2 = 6x-12$ $6(1)-12$ or $6(3)-12$ When x=1, $d^2y/dx^2 = -6$, curve has maximum value (1, 5)	1 1 1 1 1	
15.	a)	$\frac{x-4}{3}$ $f(x) = 6\left(\frac{x-4}{3}\right) + 1$ $f(x) = 2x - 7$	1 1 1	8
	b)	$3(2x-7)+4$ $gf(x) = 6x - 17$	1 1	
	c)	$3[6(x-2)+1] = 6x - 17$ $18x - 33 = 6x - 17$ $x = \frac{4}{3}$	1 1 1	
		JUMLAH	88	

TOTAL MARKS PAPER 1 = 80

TO CONVERT INTO PERCENTAGE = $\frac{X+Y}{180} \times 100\% = Z\%$

X= PUPIL'S PAPER 1 MARKS Y= PUPIL'S PAPER 2 MARKS