MIDTERM ONE FORM FOUR

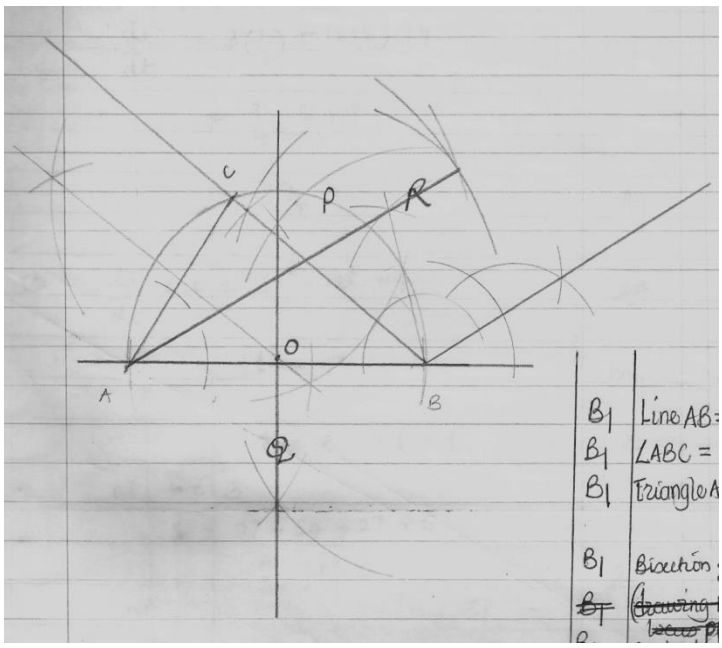
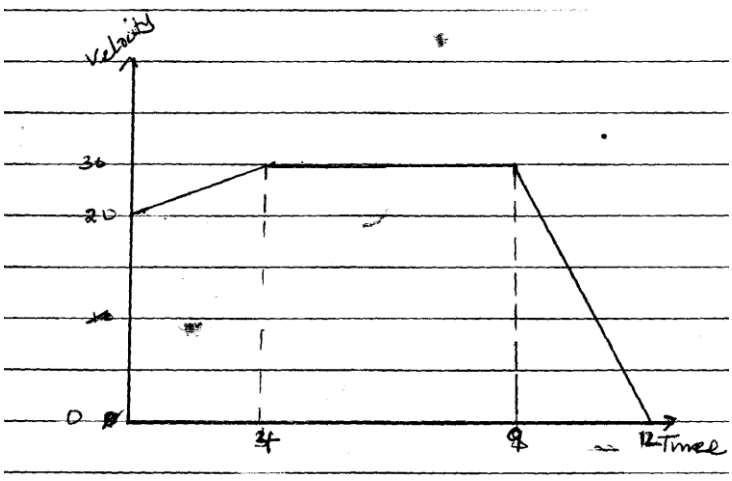
MATHS

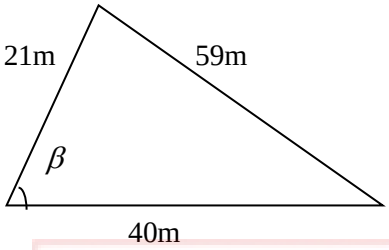
MARKING SCHEME

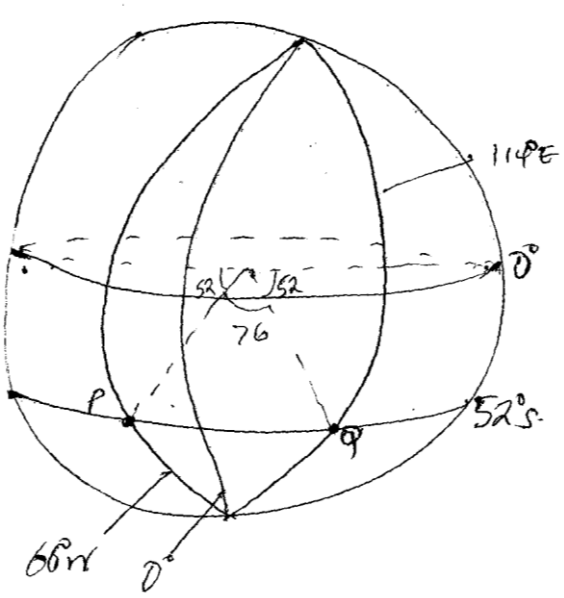
1.	No Log 34.33 1.5357 5.25 0.7202 0.042 $\bar{2}.6232$ $\bar{1}.3434$ $\bar{2}+1.3434$ 2 $\bar{1}.6717$ 1.5357 $\bar{1}.6717$ 1.8640 anti log 7.311×10^1 = 73.11	M1 M1 M1 A1	All logs Addition & sub Division by 2 C.A.O
		4	
2.	2.5 /100 x 100000 = 2,500/= 1.6/100 x 220,000= 3,520/= Total Comm. = 2,500 + 3520 = 6,020/=	M1 M1 A1	
		3	
3.	$W^2 = \frac{p^2 Q^2}{P^2 - Q}$ $W^2 = p^2 - P^2 - Q = W^2 Q$ $p^2 \frac{(W^2 - Q)}{(W^2 - Q)} = \frac{W^2 Q}{W^2 - Q}$ $P = \pm \sqrt{\frac{W^2 Q}{W^2 - Q}}$	M1 M1 A1	
		3	
4.			

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

	P(7 OR >) 21/36 = 7/12		
5.	in 1 day ,B+B does 1/6 of the work in 4 days, they do 1/6 x 4 = 2/3 of the work. In one day, BOnface does 1/10 of the work In one day brian does (1/6 – 1/10) = 1/15 of the work. If 1/15 afterwork's done by brian in 1 day Then 1/3 will be done in ½ x 1 ÷ 1/15 = 5 days to complete	M1 M1 A1	Work done by both in 4 day
		3	
6.	$M = KN + h\sqrt{N}$ 25k + 5h = 500 16k + 4h = 800 100k+ 20h = 2000 80k + 20h = 4000 20k = - 2000 k = -100 sh = 00 + 2500 sh = 3000 h = 600 $\therefore M = 600\sqrt{N}$ - 100N	B1 M1 A1 B1	For two equs Attempt to solve equations Boths values for variables correct Equation connecting m and N
7.	Log 0.045 = $\log\left(\frac{45}{1000}\right)$ = $\log\left(\frac{3^2 x5}{1000}\right)$ = 2 log 3 + log 5 – log 1000 2 x 0.4771 + 0.6990 – 3 = -1. 3468 = $\bar{2}$.6532		
		3	
8.	A = PC (1 = r /100) 6272 = 5600 (1 = r /100)^1 1.12 = 1 = r /100 r /100 = 0.12 r = 12% P (1 = 12 /100)^1 = 5600 P = 5600	M1 A1 M1	Correct subst Correct subst.

	1.12 P= 5000	 A1	
9.		4	
		M1 A1	
		2	
9.	1 8 28 56 70 $(3x)^8$ $(3x)^7$ $(3x)^6$ $(3x)^5$ $(3x)^4$ 1 (-1/x) [1] (-1/2x)[2] (-1/2x)[3] (-1/2x)[4] constan = 70 x $81x^4$x $1/16x^4$ = 35.4 375 or <u>2835</u> 8	M1 M1 A1	
		3	
10.	 Distance = area under the curve = (½ x 2 (20+30) + 5 x 30 = ½ x 3 x 30) mm = 100 + 150 + 45 = 295m	B1 M1 A1	

		3	
11.	∠ ABD = 360o (angle formed by a tangent in the opp. Segment). ∠ BDA = 127 (angle in a Δ) ∴∠ BDC = 180 – 127 = 53o Or ∠ BDC = 17 + 36 (exterior angel = opp.inter)	B1 M1 A1	Getting ∠ ABD
		3	
12.	$\frac{x(x+2) + 2(x+2)}{x + 2}$ = x + 2 $\frac{dy}{dx} = 1$	M1 A1 B1	Factorization attempt
		3	
13.	 $59^2 = 21^2 + 40^2 - 2 \times 2\ 1 \times 40 \cos \beta$ $\text{Cos } \beta = \frac{59^2 - 21^2 - 40^2}{-2 \times 21 \times 40}$ $= \frac{1440}{-1680}$ = -0.8571 42857 β = 148.9972809° = 149°	M1 M1 A1	
		3	
14.	$2^{2x+3} - 9(2^x) + 1 = 0$ Let 2^x be y $8y^2 - 9y + 1 = 0$ $Y = \frac{9 \pm \sqrt{81 - 4x8}}{16}$ $= \frac{9 \pm 7}{16}$ = 1 or 1/8 $2^x = 2^o = x = 0$ Or $2^x = 2^{-3} = x = -3$		
		3	
15.	20,000+ 22000+ 24,200 +…….. a = 20,000 $r = \frac{22000}{2000} = \frac{24200}{22000} = 1.1$	B1	For a or r

	7^{th} term = $20,000\ (1.1)^6$ = 35,431.20	M1 A1	Correct subt.
		3	
		10	
		10	
18	 a) Longitifunal difference = 114 + 66 = 180o b) 180 x 2 x 22/7 x 6370cos 52 (i) 360 = 12325.5km (ii) 76 x 2 22/7 x 6370 360 = 8452.89 km c) dist = 8452.89km Speed = 800 km/hr Time 8452.89 = 10.57hrs 800 = hrs 34min 2 sec Time of arrival = 10.00am + 10.34 2034 Or 8.34 pm		
		10	

11.

19. a) $S = t3 - 6t + 9t + 5$

$\frac{ds}{dt} = 3t2 - 12t + 9$

at $t = ½$

$\frac{ds}{dt} = 3(¼) - 12(½) + 9$

$= ¾ - 6 + 9$

$= 3¾$

b) $\frac{ds}{dt} = 0 = 3t2 - 12t + 9$

$t2 - 4t + 3 = 0$

$t = 3$ or $t = 1$

at $t = 3$

$s = 27 - 54 + 27 + 5$

$= 5$ metres

at $t = 3$

$s = 1 - 6 + + 5$

$= 9$ meters

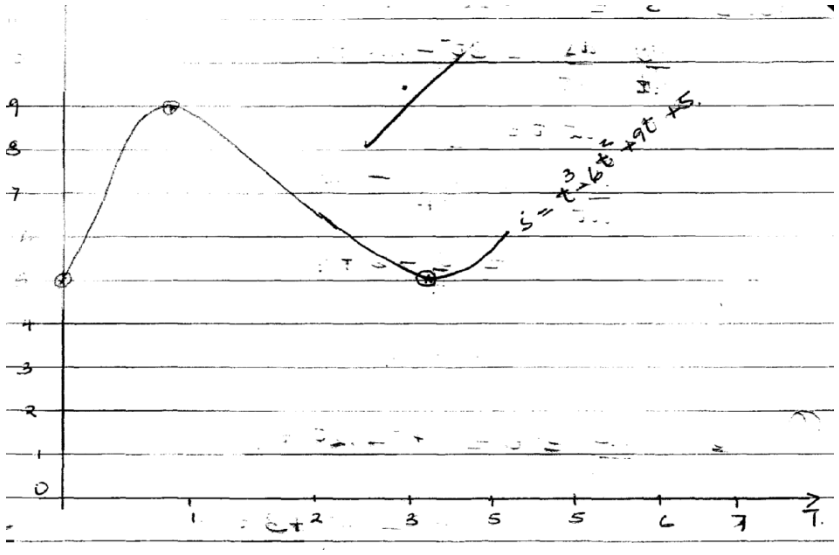
(a) points on curve

$t = 0, s = 5$ (0,5) 0 1 2

$t = 1, s = 9$ (1,9) maximum ds/dt +ve 0 -ve

$t = 3, s = 5$ (3, 5) min 2 3 4

ds/dt -ve 0 - ve



12.