1. **Trigometry 2**

1. Solve the equation: (2 mks)

$$Sin\tfrac{5}{2}X = -\tfrac{1}{2} \text{ for } 0^0 \le X \le 180^0$$

2. (a) Complete the table below, leaving all your values correct to 2 d.p. for the functions y = cos x and y = 2cos (x + 30)^0 (2 mks)

X^0	0^0	60^0	120^0	180^0	240^0	300^0	360^0	420^0	480^0	540^0
cosX	1.00			-1.00		0.50				
2cos(x+30)	1.73		-1.73		0.00					

(b) For the function y = 2cos(x+30)^0

State:

   (i)   The period (1 mk)

   (ii)   Phase angle (1 mk)

(c) On the same axes draw the waves of the functions y = cos x and y = 2cos(x+30)^0 for

$0^0 \le x \le 540^0$. Use the scale 1cm rep 30^0 horizontally and 2 cm rep 1 unit vertically

(4 mks)

(d) Use your graph above to solve the inequality $2\cos(x+30^0) \le \cos x$ (2 mks)

3. Find the value of x in the equation.
Cos(3x - 180°) = $\dfrac{\sqrt{3}}{2}$ in the range O°$\le$ x $\le$ 180° (3 marks)

4. Given that $\tan \theta = \dfrac{11}{60}$ and ɵ is an acute angle, find without using tables cos (90 – ɵ)

(2mks)

5. Solve for ɵ if -¼ sin (2x + 30) = 0.1607, 0 $\le$ ɵ $\ge$ 360^0 (3mks)

6. Given that Cos $\theta = {}^5/_{13}$ and that $270^0 \le \theta \le 360^0$, work out the value of Tan θ + Sin θ without using a calculator or mathematical tables. (3 marks)

7. Solve for x in the range $0^0 \le x \le 180^0$ (4mks)

   -8 sin^{2}x – 2 cos x = -5.

8. If tan x° = $^{12}/_5$ and x is a reflex angle, find the value of 5sin x + cos x without using a calculator or mathematical tables

9. Find θ given that 2 cos 3θ -1 = 0 for 0°$\le$θ $\le$ 360°

10. Without a mathematical table or a calculator, simplify: $\dfrac{\textbf{Cos300}^{\text{o}}\textbf{ x Sin120}^{\text{o}}}{\textbf{Cos330}^{\text{o}} - \textbf{Sin 405}^{\text{o}}}$ giving your answer in rationalized surd form.

11. Express in surds form and rationalize the denominator.

$$\dfrac{1}{\quad\quad\quad}$$

Sin 60º Sin 45º - Sin 45º

12. Simplify the following without using tables;
    Tan 45 + cos 45sin 60

13. Simplify the following surds in the form of $a + b \sqrt{c}$ where **a, b,** and **c** are constants

$$\frac{5}{2\sqrt{2} - \sqrt{5}} + \frac{2}{2\sqrt{2} - \sqrt{5}}$$

14. John cycles from shopping centre **A** on a bearing of 120º for 5 km to shopping centre **B**. He then cycles on a bearing of 200^0 for 7 km to the shopping centre **C**. Calculate to 1 decimal place.
    a) The direct distance from A to C.
    b) The bearing of A from C.
c) Bearing of B from C.