EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
31	50 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 31

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 The AMPLITUDE of $y = 3\sin x$ is ... (1)

A) 1 **B)** 0

C) 6 **D)** 3

1.2 The RANGE of $y = \sin x$ is ... (1)

A) $y \in \mathbb{R}$ **B)** $-360° \leq y \leq 360°$

C) $-1 \leq y \leq 1$ **D)** $0 \leq y \leq 1$

1.3 The RANGE of $y = 2\cos x + 1$ is ... (1)

A) $-2 \leq y \leq 2$ **B)** $-1 \leq y \leq 3$

C) $0 \leq y \leq 3$ **D)** $1 \leq y \leq 3$

1.4 On $[0° ; 360°]$, $y = \tan x$ has asymptotes at ... (1)

A) $x = 90°$ and $x = 270°$ **B)** $x = 0°$ and $x = 180°$

C) it has no asymptotes **D)** $x = 180°$ and $x = 360°$

1.5 The PERIOD of $y = \sin x$ is ... (1)

A) $180°$ **B)** 1

C) $90°$ **D)** $360°$

1.6 The graph of $y = \cos x$ cuts the y-axis at ... (1)

A) $(0 ; 1)$ **B)** $(0 ; 0)$

C) $(1 ; 0)$ **D)** $(0 ; -1)$

1.7 On $[0° ; 360°]$, $y = \sin x$ equals ZERO at ... (1)

A) $0°$, $180°$ and $360°$ **B)** $0°$ and $360°$ only

C) $180°$ only **D)** $90°$ and $270°$

1.8 The graph of $y = \sin x + 2$ ... (1)

A) cuts the x-axis twice **B)** never cuts the x-axis

C) has amplitude 2 **D)** cuts the x-axis once

1.9 Compared with $y = \sin x$, the graph of $y = -\sin x$ is ... (1)

A) shifted down 1 unit **B)** reflected in the x-axis

C) reflected in the y-axis **D)** shifted $90°$ to the right

1.10 The MAXIMUM value of $y = 4 \sin x - 1$ is ... (1)

A) 5 **B)** 4

C) 3 **D)** -1

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [11 MARKS]

Consider $f(x) = 2 \sin x$ and $g(x) = \cos x - 1$ for $x \in [0° ; 360°]$.

2.1 Write down the amplitude and the period of f. (2)

2.2 Write down the range of f and the range of g. (3)

2.3 Write down the coordinates of the maximum turning point of f and the minimum turning point of g. **(3)**

2.4 Determine the values of x for which $f(x) = 0$ on this interval. **(3)**

QUESTION 3 [10 MARKS]

Answer the questions below.

3.1 Describe the transformation from $y = \cos x$ to $y = \cos x + 3$, and write down the new range. **(3)**

3.2 Write down the equations of the asymptotes of $y = \tan x$ for $x \in [0° ; 360°]$, and explain why they occur there. **(4)**

3.3 Explain the difference between the effect of a and the effect of q in $y = a \sin x + q$. **(3)**

TOTAL: 31 marks

This question paper consists of 3 questions.

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