EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
39	1 hour	3

Name: ..... Class: .....

Date: .....

MARK ____ / 39

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 asymptotes of $y = \frac{3}{x}$ are ... (1)

A) $x = 0$ and $y = 0$
B) $x = 3$ and $y = 3$
C) $y = 3$ only
D) $x = 0$ only

1.2 The horizontal asymptote of $y = \frac{2}{x} + 3$ is ... (1)

A) $y = 2$
B) $x = 3$
C) $y = 3$
D) $y = 0$

1.3 The graph of $y = \frac{a}{x}$ with $a < 0$ lies in quadrants ... (1)

A) 3 and 4
B) 1 and 3
C) 2 and 4
D) 1 and 2

1.4 The y-intercept of $y = 3 \times 2^x$ is ... (1)

A) 1
B) 3
C) 0
D) 2

1.5 The asymptote of $y = 2^x + 1$ is ... (1)

A) $y = 2$
B) $x = 0$
C) $y = 0$
D) $y = 1$

1.6 Does $y = 2^x$ have an x-intercept? (1)

A) no — 2^x is never 0 **B)** yes, at $x = 2$

C) yes, at $x = 0$ **D)** yes, at $x = 1$

1.7 $y = 3^x$ is increasing. The graph of $y = (\frac{1}{3})^x$ is ... (1)

A) undefined for negative x **B)** decreasing

C) a straight line **D)** also increasing

1.8 The domain of $y = \frac{4}{x}$ is ... (1)

A) $x > 0$ **B)** $x \in \mathbb{R}, x \neq 0$

C) $y \in \mathbb{R}, y \neq 0$ **D)** $x \in \mathbb{R}$

1.9 The point $(2\ ;\ 6)$ lies on $y = \frac{a}{x}$. Then $a = ...$ (1)

A) $\frac{1}{3}$ **B)** 3

C) 8 **D)** 12

1.10 For $y = 5 \times 3^x$, each time x increases by 1 the value of y is ... (1)

A) multiplied by 3 **B)** increased by 5

C) multiplied by 5 **D)** increased by 3

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 [13 MARKS]

Given the function $f(x) = \frac{6}{x} - 2$.

2.1 Write down the equations of the asymptotes of f, and explain how each one is read off the equation. (3)

2.2 Explain why f has no y-intercept. (3)

2.3 Calculate the coordinates of the x-intercept of f. (4)

2.4 Write down the domain and the range of f, and explain why each one excludes exactly ONE value. (3)

QUESTION 3 [16 MARKS]

Given the function $g(x) = 2(3)^x - 6$.

3.1 Write down the equation of the asymptote of g, and explain why the graph never reaches it. **(3)**

3.2 Calculate the coordinates of the y-intercept of g. **(3)**

3.3 Calculate the coordinates of the x-intercept of g. **(4)**

3.4 Describe what happens to g as x becomes very small (very negative), and write down the range of g. **(3)**

3.5 Determine the value of $g(2)$, and hence state whether the point $(2\ ;\ 10)$ lies on g. **(3)**

TOTAL: 39 marks

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