EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
32	50 minutes	3

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

Date: .....

MARK ____ / 32

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 A circle with centre $(a\ ;\ b)$ and radius r has equation ... (1)

A) $(x-a)^2+(y-b)^2=r^2$ **B)** $(x+a)^2+(y+b)^2=r^2$

C) $(x-a)^2+(y-b)^2=r$ **D)** $(x-a)^2-(y-b)^2=r^2$

1.2 The centre of $(x-3)^2+(y+2)^2=25$ is ... (1)

A) $(-3\ ;\ 2)$ **B)** $(3\ ;\ 2)$

C) $(-3\ ;\ -2)$ **D)** $(3\ ;\ -2)$

1.3 The RADIUS of $(x-3)^2+(y+2)^2=25$ is ... (1)

A) 25 **B)** $\sqrt{5}$

C) 5 **D)** $12{,}5$

1.4 $x^2+y^2-6x+4y-12=0$ has centre ... (1)

A) $(6\ ;\ -4)$ **B)** $(3\ ;\ -2)$

C) $(-3\ ;\ 2)$ **D)** $(-6\ ;\ 4)$

1.5 The radius of $x^2+y^2-6x+4y-12=0$ is ... (1)

A) 5 **B)** $\sqrt{12}$

C) 25 **D)** 12

1.6 A tangent to a circle at a point P is PERPENDICULAR to ... (1)

A) any chord through P **B)** the x-axis

C) the radius drawn to P **D)** every diameter of the circle

1.7 A circle has centre C$(2\ ;\ 1)$ and P$(5\ ;\ 5)$ lies on it. Its radius is ... (1)

A) 25 **B)** 7

C) 5 **D)** $\sqrt{7}$

1.8 The gradient of the radius from C$(2\ ;\ 1)$ to P$(5\ ;\ 5)$ is ... (1)

A) $\frac{4}{3}$ **B)** $\frac{3}{4}$

C) $\frac{-4}{3}$ **D)** $\frac{-3}{4}$

1.9 So the gradient of the TANGENT at P$(5\ ;\ 5)$ is ... (1)

A) $\frac{4}{3}$ **B)** $\frac{-4}{3}$

C) $\frac{3}{4}$ **D)** $\frac{-3}{4}$

1.10 The equation of that tangent at P$(5\ ;\ 5)$ is ... (1)

A) $y = -3x + 5$ **B)** $4y = -3x + 35$

C) $3y = -4x + 35$ **D)** $4y = 3x + 5$

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 [12 MARKS]

A circle has the equation $x^2 + y^2 - 4x + 6y - 12 = 0$.

2.1 Determine the coordinates of the centre and the length of the radius by completing the square. (5)

2.2 Show that the point $(5\ ;\ 1)$ lies on the circle. **(2)**

2.3 Determine the equation of the tangent to the circle at $(5\ ;\ 1)$. **(5)**

QUESTION 3 [10 MARKS]

Answer the questions below about the same circle.

3.1 Determine the coordinates of the point on the circle DIAMETRICALLY opposite $(5\ ;\ 1)$. **(3)**

3.2 Determine whether the point $(6\ ;\ 1)$ lies inside, on, or outside the circle. Justify with a calculation. **(4)**

3.3 Write down the equation of the circle with the same centre but twice the radius. **(3)**

TOTAL: 32 marks

This question paper consists of 3 questions.

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