OCR
RECOGNISING ACHIEVEMENT

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
General Certificate of Secondary Education

MATHEMATICS C
(Graduated Assessment)

1966/2339A

MODULE M9 – SECTION A

Wednesday **29 JUNE 2005** Morning 30 minutes

Candidates answer on the question paper.
Additional materials:
Geometrical instruments
Tracing paper (optional)

Candidate Name

Centre Number

Candidate Number

TIME 30 minutes

INSTRUCTIONS TO CANDIDATES

- Write your name, Centre number and candidate number in the boxes above.
- Answer **all** the questions.
- Write your answers on the dotted lines unless the question says otherwise.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- There is a space after most questions. Use it to do your working. In many questions marks will be given for a correct method even if the answer is incorrect.
- Do not write in the bar code. Do not write in the grey area between the pages.
- **DO NOT** WRITE IN THE AREA **OUTSIDE** THE BOX BORDERING EACH PAGE. ANY WRITING IN THIS AREA WILL NOT BE MARKED.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [ ] at the end of each question or part question.
- The total number of marks for this Section is 25.

WARNING
You are not allowed to use a calculator in Section A of this paper.

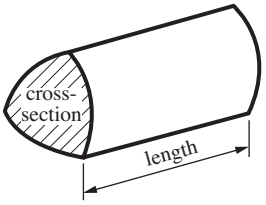
FOR EXAMINER'S USE	
Section A	
Section B	
TOTAL	

This question paper consists of 6 printed pages and 2 blank pages.

[Turn over

Formulae Sheet

Volume of prism = (area of cross-section) × length

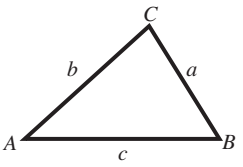


In any triangle ABC

Sine rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

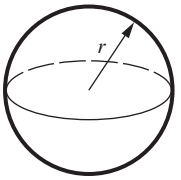
Cosine rule $a^2 = b^2 + c^2 - 2bc\cos A$

Area of triangle = $\frac{1}{2}ab\sin C$



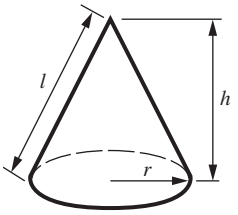
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$



Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$
where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

1 Evaluate.

(a) 5^0

(a) .....[1]

(b) 4^{-2}

(b) .....[1]

(c) $64^{\frac{1}{3}}$

(c) .....[1]

3

2 **(a)** Expand and simplify.

$$(2x - 1)(x + 4)$$

(a) .....[3]

(b) **(i)** Factorise.

$$x^2 - 7x + 6$$

(b)(i) .....[2]

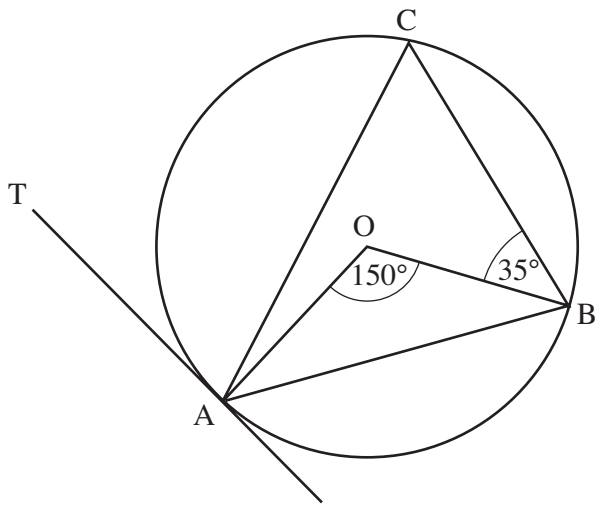
(ii) Hence simplify.

$$\frac{x^2 - 7x + 6}{x^2 - 36}$$

(ii) .....[3]

8

3



Not to scale

A, B and C are points on the circumference of a circle with centre O.
TA is a tangent to the circle.
Angle AOB = 150° and angle CBO = 35°.

(a) (i) Find angle ACB.
Give a reason for your answer.

Angle ACB = ...° because .....

.....[2]

(ii) Find angle TAC.
Give reasons for your answer.

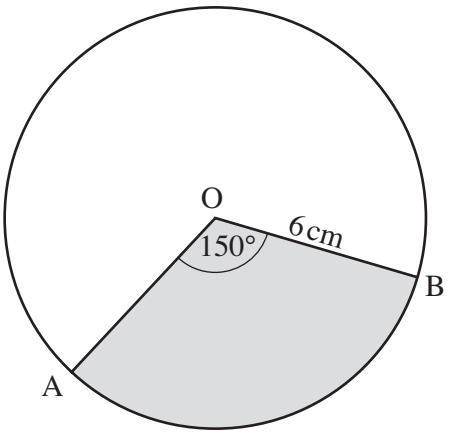
Angle TAC = ...° because .....

.....

.....[3]

(b) The radius of the circle is 6 cm.

Work out the area of the shaded sector AOB.
Express your answer as simply as possible in the form $k\pi\,\text{cm}^2$.



Not to scale

(b) .....cm^2 [3]

8

4 **(a)** Make r the subject of this formula.

$$V = \frac{1}{3}\pi r^2 h$$

(a) .....[3]

(b) Make v the subject of this formula.

$$u + v = uvf$$

(b) .....[3]

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