

Indices

Please write clearly in block capitals

Forename:

Surname:

Materials

For this paper you must have:

- mathematical instruments



You must **not** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

- 1(a)** Simplify the expression $x^2 \times x^8$
Circle your answer below.

(Level 5)

[1 mark]

x^{16}

x^{10}

x^{64}

x^{256}

- 1(b)** Simplify the expression $a^2 \div a^8$
Circle your answer below.

[1 mark]

a^4

$a^{\frac{1}{4}}$

a^{-6}

$\sqrt{a^8}$

- 1(c)** Simplify the expression $(y^2)^8$
Circle your answer below.

[1 mark]

y^{16}

y^{256}

y^{10}

y^{64}

Turn over for next question

2 Simplify the following expressions:

(Level 5)

2(a)

$$(4x)^{-2}$$

[1 mark]

Answer _____

2(b)

$$8^{\frac{2}{3}}$$

[1 mark]

Answer _____

2(c)

$$4^{-\frac{3}{2}}$$

[1 mark]

Answer _____

2(d)

$$\sqrt{81^{\frac{1}{2}} \times 2^4}$$

[2 marks]

Answer _____

Turn over for next question

3 Simplify the following expression

(Level 5)

$$\frac{5^2 \times 5^{-4}}{5^3}$$

[2 marks]

Answer _____

4 Simplify the following expression.

(Level 5)

$$\frac{5x^2y^3 \times 2x^4y^{-2}}{10x^6y}$$

[2 marks]

Answer _____

5 Write the following expression as a power of 5.

(Level 5)

$$\frac{25^5}{5^3}$$

[2 marks]

Answer _____

Turn over for next question

6(a)

Work out $27^{\frac{2}{3}}$

(Level 5)

[1 mark]

Answer _____

6(b)

Work out $32^{\frac{3}{5}}$

[1 mark]

Answer _____

6(c)

Work out $64^{\frac{3}{2}}$

[1 mark]

Answer _____



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7(a) Express $\sqrt[3]{y}$ in the form y^k

(Level 6)

[1 mark]

Answer _____

7(b) Express $\frac{1}{y\sqrt{y}}$ in the form y^k

[3 marks]

Answer _____

7(c) Show that $\sqrt{2\frac{1}{4}}$ is equal to 1.5

[2 marks]

Answer _____

End of questions