1 (a) Write 4.5×10^5 as an ordinary number.

4.5×10^5 → shift the decimal point 5 times to the right

$= 450\,000$ (1)

450 000

(1)

(b) Write 0.007 in standard form.

1 2 3

7×10^{-3} (1)

(1)

(c) Work out $4.2 \times 10^3 + 5.3 \times 10^2$
Give your answer in standard form.

$4.2 \times 10^3 + 5.3 \times 10^2$

(1) Use same power, in this case, 10^2 for ease of calculation

$= 42 \times 10^2 + 5.3 \times 10^2$

$= 47.3 \times 10^2$ (1)

$= 4.73 \times 10^3$ (1)

4.73×10^3

(2)

(Total for Question 1 is 4 marks)

2 (a) Write 1.63×10^{-3} as an ordinary number.

divide by 1000 → move decimal place 3 places to the left

1

0.00163

(1)

(b) Write 438 000 in standard form.

1

4.38×10^{5}

(1)

(c) Work out $(4 \times 10^{3}) \times (6 \times 10^{-5})$
Give your answer in standard form.

Method: multiply regular numbers, add powers of 10

$= 4 \times 6 \times 10^{3} \times 10^{-5}$

$= 24 \times 10^{3-5}$ (1)

$= 24 \times 10^{-?}$

÷10 ↓ ↓ ×10 keeps value the same

$= 2.4 \times 10^{-1}$

Note: in standard form the front number is between 1 and 10.

1

2.4×10^{-1}

(2)

(Total for Question 2 is 4 marks)

3 (a) Write 6.75×10^{-4} as an ordinary number.

$\frac{6.75}{10\,000} = 0.000675$

0.000675 (1)

.....

(1)

(b) Work out $\frac{2.56 \times 10^{6} \times 4.12 \times 10^{-3}}{1.6 \times 10^{-2}}$

Give your answer in standard form.

$\frac{2.56 \times 4.12}{1.6} \times (10^{6-3-(-2)})$ (1)

– Separate the number parts to the power parts. Do the operations separately.

$= 6.592 \times 10^{5}$ (1)

6.592×10^{5}

.....

(2)

(Total for Question 3 is 3 marks)

4 (a) Write $(9 \times 10^4) : (4.5 \times 10^6)$ in the form $1 : n$ where n is an integer.

$(9 \times 10^4) : (4.5 \times 10^6)$

$1 : \dfrac{4.5 \times 10^6}{9 \times 10^4}$ (1)

$1 : 0.5 \times 10^2$

$1 : 50$

$1 : 50$ (1)

(2)

(b) Write the following numbers in order of size.
Start with the smallest number.

5.625×10^4 5625 56250×10^{-3} 0.005625×10^5

56250 56.25 562.5

(1)

56250×10^{-3}, 0.005625×10^5, 5625, 5.625×10^4 (1)

(2)

(Total for Question 4 is 4 marks)