Full Name: …….. **Date: 25 November 2025**

Test

Time Allowed: 15 minutes **Total Marks: 20**

1.

M is directly proportional to L^3.

When $L = 2$, $M = 160$

(a) Find a formula for M in terms of L.

(b)

Find the value of M when $L = 3$

.....

(Total 4 marks)

2.

In a factory, chemical reactions are carried out in spherical containers.

The time, T minutes, the chemical reaction takes is directly proportional to the square of the radius, R cm, of the spherical container.

When $R = 120$, $T = 32$

(a) Find a formula for T in terms of R.

(b)
Find the value of T when $R = 150$

$T =$ .....

(Total 4 marks)

3.

It is given that y is inversely proportional to the **square root** of x.

When $x = 6.25$, $y = 3.2$.

(a) Express y in terms of x.

y = ……..

(3)

(b) Find x when $y = 16$.

……

(1)

(c) Find y when $x = 100$.

……

(1)

[Total 5 marks]

4.

h is inversely proportional to the square of r.

When $r = 5$, $h = 3.4$

Find the value of h when $r = 8$

$h =$ .....

(4 marks)

5.

Show that the following equation has a solution in the interval shown in the brackets.

$$x^3 + 2x^2 - 3x - 6 = 0 \qquad (1 < x < 2)$$

(3 marks)

- End of Test -