



# TEST PAPER: MATHEMATICS

Time: 90 Minutes

Class: 9<sup>th</sup> C.B.S.E.

Max. Marks: 50 Marks

Date: 22<sup>nd</sup> July, 2018

**Marking Scheme:** Four questions carry 10 marks each. Questions have 3 subparts each. Subparts (a) and (b) carry 3 marks each and subpart (c) carries 4 marks.

## Question 1:

a. If  $x^2 + \frac{1}{x^2} = 18$  then find the value of  $x - \frac{1}{x}$ .

b. Rationalise the denominator of

$$\frac{1}{\sqrt{3} - \sqrt{2}}$$

c. i. In which quadrant or on which axis do each of the points (-2,4), (3,-1) lie?

ii. What is the abscissa of origin?

iii. At what point the axes intersect?

iv. What is the sign of y-coordinate below the x-axis?

## Question 2:

a. Using the long division method, determine the remainder when the polynomial  $4x^5 + 2x^4 - x^3 + 4x^2 - 7$  is divided by  $(x - 1)$ .

b. Evaluate the following products using algebraic identities.

(a)  $993^3$

(b)  $1002^3$

c. If  $x = \frac{2 - \sqrt{5}}{2 + \sqrt{5}}$  and  $y = \frac{2 + \sqrt{5}}{2 - \sqrt{5}}$ , find the value of  $x^2 + y^2 + xy$ .

## Question 3:

a. Find a if the remainder is 4 when  $x^3 + 3x^2 - ax + 3$  is divided by  $x - 2$ .

b. Use the Remainder Theorem, find the remainder when  $4x^3 - 3x^2 + 2x - 4$  is divided by  $x + 1$ .

c. Determine rational numbers p and q if

$$\frac{7 + \sqrt{5}}{7 - \sqrt{5}} - \frac{7 - \sqrt{5}}{7 + \sqrt{5}} = p - 7\sqrt{5}q.$$

## Question 4:

a. Find the value of k if the remainder is -3 when  $kx^3 + 8x^2 - 4x + 10$  is divided by  $x + 1$ .

b. Represent on the number line:

i.  $-11/3$

ii.  $\sqrt{5}$

c. Draw the graph of equation  $3x + 6y = 12$ . Find the coordinates of the point where the graph cuts the y-axis.

## Question 5:

a. 1. Which graph is parallel to x-axis?

(a)  $y = x + 1$

(b)  $y = 2$

(c)  $x = 3$

(d)  $x = 2y$

2. Which point lies on x-axis?

(a) (3, 2)

(b) (-3, 2)

(c) (2, 0)

(d) (-1, -2)

3. Which point lies on y-axis?

(a) (1, 3)

(b) (0, 3)

(c) (5, 2)

(d) (-2, -3)

b. State whether the following rational numbers will have a terminating decimal expansion or non-terminating repeating decimal expansion:

(i)  $\frac{26}{2185}$

(ii)  $\frac{15632}{625}$

(iii)  $\frac{368}{512}$

c. Show  $\sqrt{3.8}$  on a number line.