TEST PAPER: MATHEMATICS

Time: 50 Minutes **Class: 10th C.B.S.E.**

Max. Marks: 30 Marks **Date: 25th April, 2018**

Marking Scheme: *Three 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. On comparing the ratios $\frac{a_1}{a_2}, \frac{b_1}{b_2}, \frac{c_1}{c_2}$, find out whether the lines representing the following pairs of linear equations intersect at a point, are parallel or coincident:

(i) $3x + 2y = 5$; $2x - 3y = 7$

(ii) $\frac{3}{2}x + \frac{5}{3}y = 7$; $9x + 10y = 14$

b. Solve the following simultaneous equations by the cross-multiplication method:

$x + 2y = -4$ $\qquad$ $3x - 5y = -1$

c. The sum of the numerator and denominator of a fraction is 12. If the denominator is increased by 1, the fraction becomes 7/6. Find the fraction. (Use substitution method to solve the equations)

Question 2:

a. (i) Divide $2x^2 + 3x + 1$ by $x + 2$ using division algorithm and state the remainder and quotient.
(ii) If x=1 is a zero of a polynomial $f(x) = x^3 - 2x^2 + 4x + k$. Write the value of k

b. 3 tables and 2 chairs cost Rs. 1900 and 2 tables and 4 chairs cost Rs. 1800. Find the cost of table and a chair. (Use elimination method to solve the equations)

c. Find all the zeros of $2x^4 - 9x^3 + 5x^2 + 3x - 1$, if two of its zeros are $2+\sqrt{3}$ & $2 - \sqrt{3}$.

Question 3:

a. Following are two equations reducible to linear equations. Solve the equations and state the values of x and y:

$$\frac{4}{x-3} + \frac{6}{y-4} = 5$$

$$\frac{5}{x-3} - \frac{3}{y-4} = 1$$

b. If α , β are the zeros of $2y^2 + 7y + 5$ find the value of $\alpha + \beta + \alpha\beta$.

c. Solve the following simultaneous equations graphically:
(a) $2x - y = 3$ $\qquad$ $4x + y = 3$