TEST PAPER: MATHEMATICS
Time: 90 Minutes   **Class:** 10th C.B.S.E.
Max. Marks: 50 Marks   **Date:** 22nd July, 2018

Marking Scheme: *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. Find the LCM and HCF of 120 and 144 by using Fundamental Theorem of Arithmetic.
b. If the product of zeroes of the polynomial $ax^2 – 6x – 6$ is 4, find the value of 'a'.
c. A diver rowing at the rate of 5 km/h in still water takes double the time in going 40 km upstream as in going 40 km downstream. Find the speed of the stream.

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. The sum of two children is 'a'. The age of the father is twice the 'a'. After twenty years, his age will be equal to the addition of the ages of his children. Find the age of father.
c. When you add two numbers and the number obtained by reversing the order of its digits is 165. If the both numbers differ by three, find the number.

Question 3:
a. Find a quadratic polynomial, the sum and product of whose zeroes are – 3 and 2, respectively.
b. Given that LCM (91, 26) = 182, then find HCF (91, 26).
c. Find all the zeroes of $2x^4 – 3x^3 – 3x^2 + 6x – 2$, if you know that two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$.

Question 4:
a. Find the zeroes of the polynomial $x^2 + 2x + 1$.
b. There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time, and go in the same direction. After how many minutes will they meet again at the starting point?
c. Solve the following pair of equations by reducing them to a pair of linear equations:
$$6x + 3y = 6xy$$
$$2x + 4y = 5xy$$

Question 5:
a. For which value of k will the following pair of linear equations have no solution?
$$3x + y = 1$$
$$(2k – 1) x + (k – 1) y = 2k + 1$$
b. Solve by cross multiplication method:
$$8x + 5y = 9$$
$$3x + 2y = 4$$
c. The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not.
If they are rational, and of the form p/q, what can you say about the prime factors of q?
(i) 3.12121212....
(ii) 0.11167483983949342322…