TEST PAPER: MATHEMATICS

Time: 80 Minutes **Class:** 10th I.C.S.E.

Max. Marks: 40 Marks **Date:** 29th 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. Find the co-ordinate of the image of the point (-3, 5) under
   (i) reflection in the x- axis
   (ii) reflection in the y- axis and
   (iii) reflection in the origin.

b. A line intersects x-axis at point (-2, 0) and cuts off an intercept of 3 units from the positive side of y-axis. Find the equation of the line.

c. From the top of a cliff, 60 m high, the angles of depression of the top and bottom of a tower are observed to be 30^o and 60^o. Find the height of the tower.

Question 2:

a. The point A (a, b) is first reflected in the y-axis and then reflected in the origin to a point A` (-3, 4). Write the value of a and b.

b. In what ratio does the point (1, a) divide the join of (-1, 4) and (4, -1)? Also, find the value of a.

c. Write down the equation of the line whose slope is 2/3 and which passes through P, where P divides the line segment joining A (-2, 6) and B (3, -4) in the ratio 2:3

Question 3:

a. Find the value of k for which the lines $kx - 5y + 4 = 0$ and $5x - 2y + 5 = 0$ are perpendicular to each other.

b. Prove:
$$\frac{\sin A}{1+\cos A} = cosecA - \cot A$$

c. ABCD is a parallelogram where A (x, y), B (5, 8), C (4, 7) and D (2, -4). Find:
   (i) Co-ordinates of A
   (ii) Equation of diagonal BD

Question 4:

a. Prove:
$$(\sin\theta + \cos\theta)(\tan\theta + \cot\theta) = \sec\theta + cosec\theta$$

b. In what ratio is the join of (4, 3) and (2, -6) divided by the x-axis. Also, find the co-ordinates of the point of intersection.

c. A man in a boat rowing away from a lighthouse 150 m high, takes 2 minutes to change the angle of elevation of the top of the lighthouse from 60^o to 45^o. Find the speed of the boat.