# **PRITHWI SECONDARY BOARDING SCHOOL** Basundhara, Kathmandu, Contact: 01-5904816

**ANNUAL EXAMINATION - 2077**

**Grade: IX Full Marks: 50**

**Subject: Optional Mathematics Pass Marks: 20**

**Time: 1 hour 30 minutes**

**Group A: [2 X 1 = 2]**

* 1. 1. Write sin A in terms of cosA.
     2. If cos A = ½, find sinA.

**Group B: [6 X 2 = 12]**

* + 1. Let A = and B = be any two non – empty sets. Find A B and B A and hence show that A B B A.
    2. Find the sum of the polynomials P (x) and q(x), where p(x) = 9x -15 and q(x) = 10 – 20x.
    3. If f(x) = 2x +5 find f (6) – f (0).
    4. If A = and B = , find 2A –B.
    5. Find the distance between the points (4, 8) and ( -3,6).
    6. Find the co-ordinates of a point which divide the line joining the points (-2, 3) and (4, 5) internally in the ratio of 3 :5.
    7. Show that the point (1, 2) lies on the locus whose equation is 2x – 4y +6 =0.
    8. Find the equation of straight-line having slope 6 and y - intercept 7 units.
  1. 1. Find the value of sin150.
     2. If tanB = 3/4, find secB.
  2. 1. Find the value of cot150.
     2. The co -ordinates of the mid-point of the line joining the points (a, b) and (3, 5) is (7, 9). Find the value of a and b.

**Group C: [9 X 4 = 36]**

* 1. Two functions f(x)= x 2 +2x -1 and g(x) = 5x +3 are given. Find the value of x for which f(x) = g(x). Also find f(4) and g(4).
  2. Let P = be a matrix. Find a matrix PT + 3P.
  3. Find the co-ordinates of two points which trisect the line segment joining the points (5, 3) and (8, 6). In what ratio is the line joining the points (1, 2) and (3, -4) is divided by X – axis? Also find the point of intersection.
  4. Prove that: + = 2secA.
  5. Prove that: .
  6. If A + B = , prove that: (cotA-1) (cotB-1) = 2.
  7. If ‘I’ is an identity matrix of order 2and M = , prove that (A -2I) (A -3I) =0.
  8. Construct a 3 × 3 matrix whose elements a­­ij are given as aij = 3j – 2j.
  9. In what ratio is the line joining the points (2.3) and (4, -5) is divided by X – axis. Also find their point of intersection.

*Best Wishes!!!*