**ISC Mathematics**

**Class – XII**

**Q1.** Solve for x and y:

                                                                      3

**Q2.** A straight line y = mx passes through the intersection of the straight lines x + 2y – 1 = 0 and 2x – y + 3 = 0 . Find the value of m.                                    3

**Q3.** Find the foci and lotus return for the hyperbola x2/4 – y2/5 = ½ .                3

**Q4.** If                                                                        3

**Q5.** If sin(xy) + cos (xy) = 1 and tan (xy), then show that dy/dx = – y/x.             3

**Q6.** Solve the following differential equation: dy/dx – ey+x = ex-y.                     3

**Q7.** Evaluate                                                3

**Q8.** A straight line is parallel to the x-axis and passes through the intersection of the lines x + 2y + 1 = 0 and y = x + 7. Find the equation of the straight line.                                                                       3

**Q9.** Show that                             5

**Q10.** Show that the equation x2 – 3xy +2y2 + 3x – 5y +2 = 0 represents two straight lines. Find the angle between them.                                5

**Q11.** Find the adjoint of the matrix   and hence find the matrix A-1.                              5

**Q12.** Verify Rolle’s theorem for the function. f(x) = e2x (sin2x – cos2x) defined in the interval [π/8, 5π/8].          5

**Q13.** Find the volume of the largest cone that can be inscribed in a sphere of radius R.             5

**Q14.** In a binomial distribution, the sum of its mean and the variance is 1.8. Find the probability of two successes if the event was conducted 5 times.              5

**Q15.**  Solve the following system of equations using matrices:                             5

                              x + y + z = 6

                             x – y + z = 2

                             2x + y – z = 1