# **Question No. 2**

**Solution to Question No. 1 part B:**

## B.1.1 Obtain a mathematical model to describe population of each countries at any time:

The Equations are,

## B.1.2 Convert the above model into a second order ODE and solve manually to get expressions for A(t) and H(t):

Which becomes,

Which is a Second Order Constant Coefficient Ordinary Differential Equation

The roots for this equation are

Hence the solution for is,

## B.1.3 Compute the population of both the countries after 10 years for the given data:

Taking the given values

Substituting these into

Population of Austria is and that of Hungary is .

## B.1.4 Comment on the results obtained and conclude:

Write your comments here.