Date: 19th September, 2018
Time: One hour

ES3104
MINERALOGY
Marks: 20

1. From the information given below calculate the dimensions of a unit cell of the cubic mineral Halite, and also the number of formula units per unit cell.
    Atomic weights: Na 22.989, Cl 35.453,
    Density of Halite 2.16 gm/cm^3,
    Avogadro's number 0.6022 x 10^{24}. [6]

2. Describe the nature of solid solution found in pyrrhotite. What is amazonite?
    [3+2 = 5]

3. The given diagram shows the arrangement of nodes in a cross section of a three dimensional lattice.
    Complete the diagram by appropriately joining the nodes with lines.
    Comment on the nature of defect present.
    Derive graphically the vector measure used to quantify this defect.
        All drawings should be made on this diagram and should be returned with the answerscript. [4]

4. What is scratch hardness of a mineral? What factor(s) control the scratch hardness of chemical substances? [5]
    OR
    What is piezoelectricity? Explain the piezoelectricity in quartz. [5]

This page is to be submitted with the Answerscript.
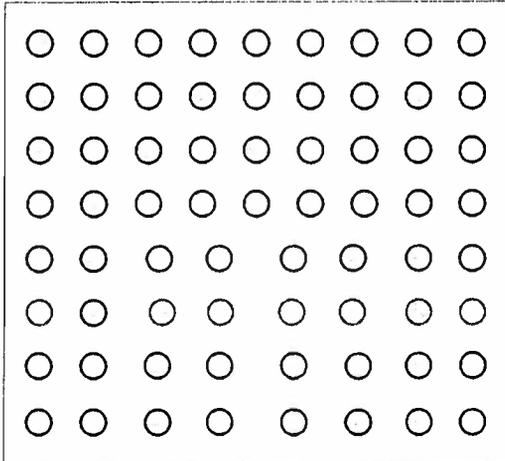
Autumn 2018
Mid-Semester test

Date: 19th September, 2018
Time: One hour

ES3104
MINERALOGY

For **Question – 3**