# 2018

## CBCS

## 1st Semester

## GEOLOGY

**PAPER—C2T**

**(Honours)**

*Full Marks* : 40

*Time* : 2 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

***Mineral Science***

Answer *all* questions.

***Group—A***

**1.** Answer any *five* questions : 5×2

(a) What do you mean by zoning? Give example of a mineral which shows zoning.

(b) Name two minerals belonging to orthorhombic system.

(c) What does the following denote :

$$(1\,1\,0),\ \{\bar{1}\,1\,0\,1\},\ [0\,2\,1],\ 2\,2\,2$$

(d) What is piezo electricity ? Give example of a mineral which possesses this property.

(e) Name the silicate minerals present in the Moh's scale of hardness.

(f) Why does an isotropic mineral, always remain dark throughout 360° microscope stage rotation ?

(g) Write down the diagnostic physical properties of Calcite.

(h) Give examples of one mineral each, for bladed form and pisolitic form.

***Group—B***

**2.** Answer any *four* questions : 4×5

(a) State and explain the Pauling's rules of coordination. 5

(b) Classify crystal system on the basis of relation among axial lengths and axial angles. 5

(c) Write short note on the types of solid solution with examples. 5

(d) (i) Calculate the zone axis for two faces with Miller indices (101) and (111). 2

(ii) Write down the symmetry elements present in a cube. Also write the Hermann -Maughuin notation of a cube. 2

(iii) Name the crystal system with lowest symmetry and also name the symmetry element(s) present in it. 1

(e) (i) Differentiate between displacive and reconstructive polymorphism. 3

(ii) Differentiate between a Prism and Pyramid. 2

(f) (i) Show the stereographic projection for the symmetry elements and faces of a cube. 3

(ii) What is Pseudomorphism ? Give examples of two minerals which exhibit Pseudomorphism. 2

## *Group—C*

**3.** Answer any *one* question : 1×10

(a) (i) Write a note on the general formula, structure and chemical composition of amphibole group of minerals. 8

(ii) What is the difference between dioctahedral and trioctahedral sheet silicates? Name one mineral each, from each type. 2

(b) (i) Note down all the possible cases for what happens to a grain of a uniaxial mineral, whose optic axis is oriented parallel to the microscope stage and is rotated through 360° in both analyser in and out situations. 6

(ii) What do you mean by Becke line? Explain how Becke line can be used to determine if a grain has a R. I. greater or lesser than the R. I. of the surrounding oil. 4

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