2017

GEOLOGY

(*Mineral Science*)

[Honours]

(CBCS)

[First Semester]

PAPER—C2T

Full Marks : 40

Time : 2 hours

Answer **all** questions

The figures in the right hand margin indicate marks

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

Illustrate the answers wherever necessary

GROUP—A

Answer any *five* of the following : 2 × 5

1. Write down the axial ratio for hexagonal system.

2. State the Miller indices of a crystal face that intersects *a*-axis at 2 unit, *b*-axis at 5 unit distance and is parallel to *c*-axis.

3. Name the high temperature polymorph of Al_2SiO_5 and high pressure polymorph of SiO_2.

4. What do you understand by [010] ?

5. Name a Na-pyroxene and a Li-mica.

6. Name a mineral having metallic lustre and another mineral having columuar form.

7. What is pleochroism ? Write a pleochroic mineral .

8. What is the difference between isotropic and anisotropic mineral ?

GROUP–B

Answer any *four* of the following : 5×4

9. Compare and contrast between optical properties of the following pairs– $2\frac{1}{2} \times 2$

(*a*) Muscovite and biotite

(*b*) Orthopyroxene and Clinopyroxene.

10. Write a short note on polymorphism. 5

11. (*a*) Define optic axis of a mineral.

(*b*) What is retardation ?

(*c*) Write the name of opticaly uniaxial and biaxial mineral. 2 + 2 + 1

12. Describe the general formula, structure and chemical composition of pyroxene. 5

13. (*a*) Distinguish between cleavage and parting of mineral.

(*b*) What is the difference between isodesmic and anisodesmic bonding ?

(*c*) What is co-ordination number of a mineral ? 2 + 2 + 1

14. Write about the working principle of Nicol Prism ? Draw necessary diagram. 5

GROUP–C

Answer any *one* of the following : 10×1

15. Classify silicate minerals according to the ratio between silicon and oxygen with proper diagrams and example. 10

16. (*a*) Between cross polarised light a mineral appears always dark on 360° stage rotation. How do you determine whether it is an isotropic or anisotropic mineral ?

(*b*) Compare and contrast between physical properties of the following pairs :

(*i*) Pyrite and chalcopyrite

(*ii*) Magnetite and hematite. $5 + 5$