Total No. of Printed Pages—4

3 SEM TDC GEO M 3

2019

(November)

GEOLOGY

(Major)

Course : 303

(Crystallography and Mineralogy)

Full Marks : 48
Pass Marks : 19/14

Time : 2 hours

The figures in the margin indicate full marks for the questions

UNIT—5.1

(Crystallography)

(*Marks* : 12)

1. State the law of constancy of interfacial angles. 1

2. Write short notes on any *two* of the following : 2½×2=5

(a) Crystallographic system

(b) Stereographic projection

(c) Twining

(d) Herman Mögling notation

3. Write in detail about the symmetry elements of Isometric system. Describe the forms developed under general class of Isometric system. 3+3=6

UNIT—5.3

(Thermodynamics and Crystal Chemistry)

(*Marks* : 10)

4. Write short notes on any *three* of the following : 3×3=9

(a) Binary eutectic phase diagram

(b) Thermal equilibrium and equilibrium constant

(c) Second law of thermodynamics

(d) Thermodynamic state variables

(e) Clausius-Clapeyron equations

(f) Polymorphic transformation

5. Fill in the blanks : ½×2=1

(a) The number of atoms surrounding a centrally coordinated atom is called _____.

(b) Silica (SiO_2) has _____ number of polymorphs.

UNIT—5.2 & 5.4

(Descriptive Mineralogy and Optical Mineralogy)

(*Marks* : 13+13=26)

6. What is mineraloid? Describe the relationship between physical properties of minerals with their internal structures. 1+6=7

7. What is extinction? How many types of extinction can be seen in minerals? Describe in brief about the procedure for determination of extinction angle. 6

Or

Describe the method of determination of interference figure of uniaxial minerals with suitable diagrams. 6

8. Write short notes on any *two* of the following : 1½×2=3

(a) Isotropic and anisotropic minerals

(b) Birefringence in minerals

(c) Optic sign of minerals

(d) Uniaxial and biaxial minerals

9. Describe the physical, chemical and optical properties of *either* K-feldspar *or* pyroxene group of minerals. 2+2+3=7

10. Fill in the blanks : 1×3=3

(a) The hardness of feldspar is _____.

(b) Microcline shows _____ twining.

(c) Quartz shows _____ order interference colour.

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