

GEOLOGY

3-2-111

II SEMESTER - W.E.F. 2015-16

Unit - I

Definition of a mineral - classification of minerals into rock forming and ore forming minerals.

Physical properties of minerals - Colour, streak, transparency, lustre, form, hardness, tenacity, cleavage, fracture and, Specific gravity.

Silicate structures- isomorphism, solid solution, polymorphism, allotropy. Pseudomorphism and radioactivity

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Olivine, Garnet and Aluminium silicates,

(12 hrs)

Unit-II

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Pyroxenes, Amphibole and Mica

(12 hrs)

Unit-III

Study of physical properties, chemical properties and mode of occurrence of the following mineral groups: Quartz, Feldspars, and feldspathoids

Miscellaneous: Staurolite, Tourmaline, Zircon, Calcite, Corundum and Apatite.

(12 hrs)

Unit-IV

General Principles of optics, Refraction, Snell's law, Critical angle, total reflection,

Optical properties of minerals – isotropic and anisotropic

Polarised light, refractive index, Double refraction, uniaxial and biaxial minerals – Nicol prism and its construction – concept of crossed Nicols

(12hrs)

Unit-V

Petrological microscope (Polarising) - its mechanical and optical parts - extinction, pleochroism and interference colours. Optical Properties of important minerals (12hrs)

Text books:

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|-----------------------------------|---|--------------------------|
| 1. A textbook of mineralogy | - | E.S. Dana and W.E. Ford. |
| 2. Rutleys elements of mineralogy | - | I.I.I. Reed |
| 3. Essential of Crystallography | - | E. Flint. |

References:

- | | | |
|---|---|---------------------------|
| 1. Manual of mineralogy | - | C.S. Hurlbut and C.Klein |
| 2. Mineralogy for students | - | M.H. Batey. |
| 3. An introduction to rock forming minerals | - | Deer, Howie, and zussman. |
| 4. Elements of mineralogy | - | Mason and Bern. |

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LAB-II (Practicals) 100 Marks

At the end of Second semester

Practical-II- Mineralogy and Optical mineralogy

Study of physical properties and diagnostic features of the following mineral:

Quartz Jasper, Agate, Chalcedony, Amethyst, Orthoclase, Microcline, Albite, Anorthite, Labradorite, Enstatite, Hypersthene, Augite, Hornblende, Actinolite, Tremolite, Asbestos, Muscovite, Biotite, Phlogopite, Olivine, Epidote, garnet, Kyanite, Sillimanite, Andalusite, Beryl, Zircon, Apatite, Corundum, Talc, Gypsum, Calcite, Fluorspar and Serpentine.

Study of optical properties of the following minerals:

Quartz, Orthoclase, Microcline, Plagioclase, Hypersthene, Augite, Tremolite, Hornblende, Muscovite, Biotite, Olivine, Epidote, Garnet, Kyanite, Beryl, Calcite, Chlorite, sillimanite, Leucite.

SRI VENKATESWARA UNIVERSITY, TIRUPATHI
THREE YEAR B.Sc DEGREE EXAMINATION
Subject: GEOLOGY SEMESTER-II
MODEL QUESTION PAPER
(Mineralogy & Optical Mineralogy)

Time: Three hours

Marks: 75

PART- A (5x5= 25 marks)
Answer any FIVE questions
Each question carries 5 marks

1. What is a mineral? Write any two physical properties of minerals
2. Explain the polymorphism.
3. Describe the physical properties of pyroxene group of minerals
4. Explain the following:
(a) Calcite (b) Corundum
5. Write a note on double refraction
6. Explain interference colours
7. Write notes on isotropic and anisotropic minerals
8. Give an account of critical angle

PART- B (5x10= 50 marks)
Answer all the questions
Each question carries 10 marks

9. Write an essay on silicate structures with neat sketches and suitable mineral examples
(or)
Describe the physical and chemical properties of garnet group of minerals and their mode of occurrence
10. Write an essay on mica group of minerals and add a note on their mode of occurrence
(or)
Give an account of amphibole group of minerals
11. Write an essay on feldspar group of minerals
(or)
Give an account of quartz group of minerals
12. Give a brief account of construction of nicol prism
(or)
Describe in detail the uniaxial minerals
13. What is petrological microscope? Explain the important parts and functions of petrological microscope
(or)
Explain the types of extinction and determine the extinction angle through polarizing microscope