

# Swami Ramanand Teerth Marathwada University, Nanded

## B.Sc.I year GEOLOGY Revised Syllabus-2013.

### Course Structure

This revised syllabus of B.Sc. I year being implemented from June 2013, according to semester system.

Semester	Paper Numbers		Title of the Paper	MCQ Pattern	
				University Examination	Internal Examination
I	Theory	I	<b>Earth as a planet and Dynamic Geology</b>	40 Marks	10 Marks
		II	<b>Mineralogy, Crystallography</b>	40 Marks	10 Marks
II	Theory	III	<b>Physical Geology and Paleontology</b>	40 Marks	10 Marks
		IV	<b>Igneous, Sedimentary and Metamorphic Petrology</b>	40 Marks	10 Marks
	Practical	V	Based On Theory Papers I,II,IIIand IV	100 Marks	--

Faculty of Science  
B.Sc. I st Year  
Sub:-Geology  
Semester –I

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**Paper- I**  
(Earth as a planet and Dynamic Geology)

**Unit-I Earth as a planet.** (Periods -25) (Marks-20)

Geology and its Perspective. Earth in the solar system: Origin, Size, Shape, Mass, density, rotation and revolution of the earth. Relief features of the earth surface and interior of earth as crust, mantle, core and introduction to hydrosphere, atmosphere and biosphere and elemental abundance in each constituent. Age of the Earth.

**Unit-II Dynamic Geology.** (Periods -20) (Marks-20)

Introduction to the processes of Earthquake, Volcanoes and their distribution.

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**Paper – II**  
(Mineralogy, Crystallography)

**Unit-I Mineralogy.** (Periods-25) (Marks-20)

Chemical bonding and compound formation. Minerals : definition, classification and composition. Physical properties of mineral Introduction to common groups of rock forming minerals such as Olivine, Pyroxene, Amphibole, Mica, Silica and Feldspar.  
Study of Common ore minerals, industrial minerals and atomic minerals.

**Unit – II Crystallography:-** (Periods -20) (Marks-20)

Elementary ideas about crystal structure. Crystal: faces, edges, solid angles, interfacial angle, contact goniometer. Crystallographic axes and axial angles. Parameters and indices. Crystal symmetry.

Classification of crystals into six normal classes such as Cubic, Tetragonal, Hexagonal, Orthorhombic, Monoclinic and Triclinic systems and their forms.

Twin and Twin laws.

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**Faculty Of Science  
B.Sc. I Year  
Sub:-Geology  
Semester –II**

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**Paper- III  
(Physical Geology and Paleontology)**

**Unit-I Physical Geology:-** (Periods-25) (Marks-20)

Geological work such as erosion, transportation and deposition by river, wind, glaciers, sea.

**Unit-II Paleontology :-** (Periods - 20) (Marks-20)

Definition and scope of paleontology, processes of fossilization and preservation. Potential of organisms. Elementary ideas about origin of life, evolution and fossil record. Geological Timescale. Systematic classification of organisms, their characters, environmental and geological distribution of phylum Arthropoda (Trilobites), Coelentrata (Graptolites), Mollusca (Lamellibranchia, Gastropoda and Cephalopoda), Brachiopods and Echinodermata.

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**Paper- IV  
(Igneous, Sedimentary and Metamorphic Petrology)**

**Unit – I Igneous and Sedimentary Petrology** (Periods -30) (Marks-25)

**Igneous Petrology:** Definition, composition origin of magma. Forms ,texture, structure and classification of igneous rocks. Study of common igneous rocks.

**Sedimentary Petrology:** Weathering, soil formation, soil profile, soil types and soil properties. Origin, transportation, deposition, consolidation and digenesis of sediments. Sedimentary textures and structures. Classification of sedimentary deposits and study of common sedimentary rocks.

**Unit – II Metamorphic Petrology :-** (Periods -15) (Marks-15)

Agents and kinds of metamorphism, metamorphic minerals, texture and structures of metamorphic rocks, processes of formation of various metamorphic rocks such as Cataclastic, Thermal, Dynamothermal and plutonic metamorphism, study of common metamorphic rocks.

Study of common rocks occurring in Maharashtra.

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## **Practicals based on Theory Papers**

### **Paper-V**

1. Reading of topographical maps (SOI).
2. Study of physical properties of minerals in hand specimen.
3. Study of elements of symmetry and forms form normal classes of six crystal system.
4. Study of Twin crystals
5. Study of megascopic characters of important rocks types of Igneous, sedimentary and Metamorphic origin.
6. Study of morphological characters of phylum included in theory syllabus.
7. Geological Field Work.

Students will be required to carry out fieldwork to study elementary aspects of field geology and submit report thereon.

One practical is of four periods duration per week

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### **PRACTICAL QUESTION PAPER**

**B.Sc. I**

**GEOLOGY**

**Paper-V**

**Time : Three hours**

**Maximum Marks - 100**

**SESSION - I**

	Marks
1. Reading of topographical maps (SOI).	10
2. Study of physical properties of minerals in hand specimen.	20
3. Study of megascopic characters of important rocks types of Igneous, Sedimentary and Metamorphic origin.	20

**SESSION - II**

4.	(a) Give axial character, elements of symmetry and forms form normal classes of crystal models from item No. 1 to 6.	15
	(b) Identify Twin crystal models from item No. 7 to 8.	05
5	Describe morphological characters and geological distribution of Shells/fossils from item No. 9 to 14.	15
6	Geological Field Work . Record Book.	05 10

### **Books Recommended**

1. Physical Geology -----P.K. Mukharjee
2. Physical Geology -----Holmes
3. Engineering and General Geology by Parbin Singh
4. Rutlay's Elements of Mineralogy C.D. Gribble, 27 th Edn
5. Introduction to geology-----Sowani and Sharma
6. Petrology ---G.W. Tyrrel
7. Igneous and Metamorphic Petrology--- Best
8. Igneous rocks----Alok Gupta
9. An Introduction to Sedimentology.-----S.R.Selley
10. Text Book of Mineralogy----J,D.Dana
11. An Introduction to crystallography--- R.C. Phillips.
12. Invertebrate Paleontology----Henry Wood