

# Swami Ramanand Teerth Marathwada University, Nanded

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

### Course Structure

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

Semester	Paper Numbers		Title of the Paper	Pattern	
				University Examination	Internal Examination
V	Theory	XII	Geomorphology and Photogeology	40 Marks	10 Marks
		XIII	Engineering Geology and Hydrogeology	40 Marks	10 Marks
VI	Theory	XIV	Stratigraphy of India	40 Marks	10 Marks
		XV	Economic Geology and Mineral Prospecting	40 Marks	10 Marks
	Practical	XVI	Based On Theory Papers XII and XIII	50 Marks	--
		XVII	Based On Theory Papers XIV and XV	50 Marks	--

**Swami Ramanand Teerth Marathwada University, Nanded**  
**Revised Theory Syllabus**

**BSc. III Year**

**Semester-V**

**Paper-XII**

*(Geomorphology and Photogeology)*

**UNIT- I : Geomorphology –**

**(Periods -20, Marks -50)**

Introduction and concepts of geomorphology, study of geomorphic surface features (land forms) of fluvial, Aeolian, glacial and marine origin.

**UNIT- II :**

**(Periods -20, Marks – 50)**

**Photogeology** -Introduction to aerial photography, satellite imageries and preparation of photogeological maps. Elements of aerial photo interpretation. Stereoscopic vision, orientation of stereoscope, stereo-pairs and stereo viewing of air photos, types of aerial photographs and photo index. Scale of aerial photographs. Application of Aerial photographs in the study of lithology, structure and geomorphology.

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**Semester-V**

**Paper-XIII**

*(Engineering Geology and Hydrogeology)*

**UNIT – I: Engineering Geology-**

**(Periods -20, Marks – 50)**

Concept and definition of engineering geology and environmental geology. Environmental and geological hazards such as earthquake volcano and mass movement. Environment and geological consideration in the location and construction of engineering structures such as dams, reservoirs and tunnels. Drilling and its application in Engineering geology.

**UNIT- II: Hydrogeology-**

**(Periods -20, Marks – 50)**

Introduction, hydrologic cycle, water table, aquifer and its classification. Aquifer properties such as porosity, permeability, specific yield, specific retention, storativity, hydraulic conductivity. Darcy's law. Occurrence of groundwater in igneous, sedimentary and metamorphic rocks. Hydrological prospecting. Concept of watershed. Methods of soil and water conservation.

**BSc. III Year Syllabus.**

**Semester-VI**

**Paper-XIV**

**(Stratigraphy of India)**

**UNIT – I: Stratigraphy- I**

**(Periods -20, Marks– 50)**

Principles of stratigraphy, units of stratigraphy, principles of correlation. Occurrence, distribution, classification, lithology and economic importance of following super-groups/groups. Archean of central province, Singhbhum, Eastern Ghats, Delhi, Dharwar, Cuddupah, Vindhyan,

**UNIT –II:**

**( Periods -20, Marks – 50)**

Occurrence, distribution, classification, lithology and economic importance of super-groups/groups : Gondwana, Deccan Traps, Geology of Kashmir, Spiti valley and Siwalik, Marine formations of Jurassic of Kutch, Cretaceous of Tiruchirapalli and Tertiary rocks of Assam.

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**Paper- XV**

**(Economic Geology and Mineral Prospecting)**

**UNIT –I: Economic Geology :**

**(Periods -20, Marks – 50)**

Introduction of economic geology, magma and mineral deposits. Metallic and non-metallic ore deposits. Processes of formation of mineral deposits such as: Magmatic concentration, sublimation, metasomatism, metamorphism, hydrothermal process, supergene sulphide enrichment, sedimentation, residual and mechanical concentration.

Occurrence, geological and geographical distribution and uses of following mineral deposits of India: Iron, chromites, copper, lead zinc, gold, bauxite, gypsum, asbestos, mica, uranium ,precious and semiprecious stones, coal and petroleum.

**UNIT –II: Mineral Prospecting:**

**(Periods -20, Marks – 50)**

Geological method of prospecting. Geochemical method of prospecting including leakage anomalies and pathfinder elements. Geophysical prospecting (Instrument, field procedure and interpretation) based on magnetic, gravity, electrical, seismic studies.

# Practical Syllabus

Swami Ramanand Teerth Marathwada University ,Nanded

Class : B.Sc. Third Year

## PAPER NO. XVI

(Based On Theory Papers XII and XIII )

Time-Four Hours Maximum

Marks : 100

- A) Morphometric Analysis of the given Watershed.
- B) Identification and description of the Geomorphological models
- C) Identification of the Structures from aerial photographs
- D) Select the suitable Engineering site from given Geological Structural Contour Map and Draw section along X-Y
- E) Well Inventory
- F) Hydrological Problems.

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## PAPER NO. XVII.

(Based On Theory Papers XIV and XV )

Time-Four Hours Maximum

Marks : 100

- A) Sub-surface information of the area with the help of Resistivity Meter.
- B ) Identify and locate the Geological Formations on a given map of India.
- C) Identification and description of the Physical Properties of Ore Minerals.
- D ) Describe and Locate the occurrence of Ore Minerals in the given map of India.
- E ) Field work and viva

Record Book

# **Theory Question Paper pattern**

Faculty of Science

B.Sc. Third Year

Sub : Geology

**Semester-V**

*(Geomorphology and Photogeology )*

**Paper- XII**

Time : 3Hrs.

Marks : 80

Note : i) All questions are compulsory and Carry equal marks.

ii) Draw neat diagram wherever necessary

Q. No. 1: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 2: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 3: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 4: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 5: Full length Question

Marks 16

Or

Write Short Note

a)

b)

# **Theory Question Paper pattern**

Faculty of Science

B.Sc. Third Year

Sub : Geology

**Semester-V**

## **Paper-XIII**

*(Engineering Geology and Hydrogeology)*

Time : 3Hrs.

Marks : 80

Note : i) All questions are compulsory and Carry equal marks.  
ii) Draw neat diagram wherever necessary

Q. No. 1: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 2: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 3: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 4: Full length Question

Marks 16

Or

Write Short Note

a)

b)

Q. No. 5: Full length Question

Marks 16

Or

Write Short Note

a)

b)

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**(This question paper pattern will be same for Semester VI and Paper No.XIV and XV)**

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**Practical Question Paper Pattern**  
Swami Ramanand Teerth Marathwada University ,Nanded  
in **GEOLOGY** Subject  
Class : B.Sc. Third Year  
**PAPER NO. XVI**

Time-Four Hours Maximum

Marks : 100

**Session- I**

- Q.1. Identify and describe the Geomorphologic models from Item No. 1 to 5. 15 marks
- Q.2. Identify the Structures from aerial photographs from Item No. 6 & 7 20 marks
- Q.3 Carry out the Morphometric Analysis of the given Watershed. 15 marks

**Session- II**

- Q.4. Select the suitable Engineering site from given Geological Structural Contour Map and  
Draw section along X-Y 15 marks
- Q.5 Solve the given Hydrological Problem. 15 marks
- Q.6 Draw the well section on the basis of well inventory. 10 marks

Record Book 10 marks

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Practical Question Paper in **GEOLOGY** Subject

Class : B.Sc. Third Year

**PAPER NO. XVII.**

Time-Four Hours Maximum

Marks : 100

**Session- I**

- Q.1. Find out the sub-surface information of the area with the help of Resistivity Meter. 20 marks
- Q.2 Identify & locate the Geological Formations on a given map of India from item No.1 to 2 20 marks
- Q.3 Field work and viva 10 marks

**Session- II**

- Q.4. Identify and describe the Physical Properties of Ore Minerals from item No. 3 to 12. 25 marks
- Q.5. Locate the occurrence of Ore Minerals in the given map of India from item No. 13 to 14 15 marks
- Record Book . 10 marks

# Internal Examination

The internal examination to be conducted at college level of 20 marks for each paper by Multiple Choice Questions.

## Pattern of Internal Examination

Swami Ramanand Teerth Marathawada University, Nanded

Faculty of Science

B.Sc. Third Year

Sub : Geology

**Semester-V**

Multiple Choice Questions

**Paper- XII**

*(Geomorphology and Photo geology )*

Time : 20 min

Marks : 20

There will be 20 multiple choice questions and each question carry one mark.

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**This pattern will be same for Semester V and VI for all papers.**

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## Books Recommended-

1. Holms Principles of Physical Geology - D. Duff
2. Geology of India and Burma - M.S. Krishnan
3. Geology of India and Burma - D.N. Wadia
4. Fundamental of Historical Geology - Ravindra Kumar
5. Exploration of Geophysics - V.L.S. Bhimashankaran
6. General and Applied Geophysics - Kaul, Bhattacharya and Sengupta
7. Principles and Applications of Photogeology - Shiv N. Pande
8. Groundwater - H.M. Raghunath
9. Introduction to Geophysical Prospecting - Dorbin
10. Studies of Mineral deposits - Smrinov, Ginzburg and Others
11. Ore Deposits of India - KVGK Gokhale and T.C. Rao
12. Applied Hydrology - C.W. Feter
13. Economic Mineral Deposits - Bateman
14. Principles of Geomorphology - Thornmbury
15. Engineering Geology - Parbin Singh
16. Mining Geology - Arogyaswami
17. Elements of Hydrology - Vijay Singh
18. Watershed Hydrology - R. Suresh
19. Rainwater Harvesting - K. Meghashyam
20. Geomorphology - Bloom