

## IV-SEMESTER

### Paper-IV- Metamorphic Petrology and Structural Geology

#### Unit-I

Definition of metamorphism, agents of metamorphism, types of metamorphism, grades and Zones, of metamorphism. Metamorphic minerals - stress and antistress minerals. Structures of metamorphic rocks - Cataclastic, maculose, schistose, granulose and gneissose. Textures of metamorphic rocks- crystalloblastic, xenoblastic.

(12 hrs)

#### Unit-II

*Classification of metamorphic rocks Cataclastic metamorphism of argillaceous and arenaceous rocks. Thermal metamorphism of argillaceous, arenaceous and calcareous rocks. Dynamo thermal metamorphism of argillaceous, arenaceous and igneous rocks. Plutonic metamorphism, metasomatism. Descriptive study of the following metamorphic rock- Gneiss, schist, slate, phyllite, quartzite, marble, Clarianokite and khondalite.*

(12 hrs)

#### Unit-III

Definition of structural geology, aim and objectives of the structural Geology; Importance of study of structures, primary and secondary structures; outcrop, attitude of beds - strike, dip and apparent dip. Use of clinometer and Brunton compass. Folds -description, nomenclature of folds - Geometrical and genetic classification. Recognition of folds in the field.

(12 hrs)

#### Unit-IV

Joints- Classification of Joints- geometrical and genetic classification. Faults – geometrical and Genetic Classification of faults, recognition of faults in the field, effects of faults on the outcrops.

(12 hrs)


#### Unit-V

Unconformities- Definition of unconformity- types of unconformities. Recognition of unconformities in the field. Distinguishing the faults from unconformities. Definitions of overlap, outlier, cleavage, schistosity, foliation and lineation

(12 hrs)

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Signature of the Members :

  
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### Text books

- |                                     |   |                        |
|-------------------------------------|---|------------------------|
| 1. The principles of petrology      | - | G. W. Tyrrell:         |
| 2. Metamorphic petrology            | - | B Bhaskar Rao          |
| 3. Structural Geology               | - | Marlarid. F. Billings. |
| 4. An outling of structural Geology | - | E.S. Hills             |

### Reference

- |   |   |                |   |
|---|---|----------------|---|
| 1. <i>Petrology of Igneous<br/>and Metamorplic rocks.</i> | - | Hyndman        |   |
| 2. Structural Geology                                     | - | L.U. De Setter | - |
| 3. An outline of structural Geology                       | - | E.S. Hills     |   |

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Signature of the Members :

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**LAB-IV (Practicals) 100 Marks**

**At the end of Fourth semester**

**Practical- IV: Metamorphic Petrology and Structural Geology**

Megascopic and microscopic study of the following rocks:

Schist, Gneiss, Quartzite, Marble, Charnockite and Khonodolite.

Study of topographical maps.

Interpretation of simple geological maps with horizontal and inclined beds, Unconformity, folds and faults with reference to the topography and structure, geological succession and history. Section drawing (at least 8 maps)

Problems dealing with true dip and apparent dip. Bore-hole data thickness and width of the outcrop and dip of the beds (At least 8 problems).

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**SRI VENKATESWARA UNIVERSITY, TIRUPATHI**  
**THREE YEAR B.Sc DEGREE EXAMINATION**

**Subject: GEOLOGY SEMESTER-IV**

**MODEL QUESTION PAPER**

**(Metamorphic Petrology & Structural Geology)**

**Time: Three hours**

**Marks: 75**

**PART- A (5x5= 25 marks)**

**Answer any FIVE questions**

**Each question carries 5 marks**

1. Explain the grades and zones of metamorphism
2. Write a note on dynamothermal metamorphism
3. How do you recognise the folds in the field?
4. Describe different types of joints
5. Foliation and Lineation
6. Explain the agents of metamorphism
7. Strike and Dip
8. Parts of folds

**PART- B (5x10= 50 marks)**

**Answer all the questions**

**Each question carries 10 marks**

9. Describe the structures of metamorphic rocks  
(or)  
Give an account of textures of metamorphic rocks
10. Write an essay on cataclastic metamorphism  
(or)  
Describe the thermal metamorphism
11. Write an essay on classification of folds with suitable diagrams  
(or)  
Describe various primary structures with neat sketches
12. Describe the geometrical classification of faults  
(or)  
How do you recognize the faults in the field?
13. How do you distinguish the faults from unconformities  
(or)  
Write an essay on different types of unconformities with neat diagrams

Signature of the Chairman / Chairperson:  
Signature of the Members :

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