Syllubus in Geology of All Universities in Andhra Pradesh State

III-SEMESTER

Paper- I I I - Igneous Petrology and Sedimentalogy

U n i t - I

Nature and scope of petrology - definition of rock, classification of rocks into igneous, sedimentary and metamorphic. Distmguish features of three types of rocks.

Forms -Lava flows, Instrusions, sills, laccolith, bysmalith, lopolith, dykes, ring Structures - vesicular, amygdaloidal, block lava, ropy lava, pillow, flow, and sheet structures. Columnar and prismatic structures

(1 2 h r s)

Unit-II

Textures - Definition of texture, micro-structure, devitrification - Hypidiomorphic, pandiomorphic, porphyritic, poikilitic, ophitic, intergrartular, intersertal, trachytic, graphic and micro-graphic textures. Classification of igneous rocks - CIPW and Tyrrell tabular classification.

Descriptive study of following rock types: Granite, Syenite, Diorite porphyry, Pegmatite, Gabbro, Pyroxenite, Dunite, Dolerite, Rhyolite, Trachyte, and Basalt
(12hrs)

Unit-III

Composition and constitution of magma - Crystallisation of Magma - Uni-component, binary system, eutectic and solid solutions.

Origin of igneous rocks - Bowen's reaction principle, differentiation and assimilation of magma.

(12hrs)

Unit - IV

Sources of sediments - mechanical and chemical weathering, modes of transportation, stratification. Sedimentary structures, Types of bedding, surface marks, deformed **bedding,** solution structures

(12hrs)

Unit-V

Classification of sedimentary rocks; clastic - rudaceous, arenaceous, argillaceous, non-clastic -calcareous, carbonaceous, evaporities

Descriptive study of the following sedimentary rocks - conglomerate, Breccia, Sandstone, Gritt, Arkose, Shale and limeston.

(12 hrs)

Text books

1. Principles of petrology - G.W. Tyrrell
2. Petrology - W. T. Huang

References

1. Petrology for students - S.R.Ndckolds Knox, Chinnar
2. A Text book of sedimentary petrology - Verma & Prasad
3. Petrology of the sedimentary rocks - J.T. Greehsmith
4. Petrology of the sedimentary rocks - F.H;Hatch, Wells and Wells.
5. Petrology of the igneous rocks - F.KHatch, Wells and Wells.

LAB-III (Practicals) 100 Marks

<u>At the end of Third semester</u>

Practical- II- Igneous Petrology and Sedimentalogy

Megascopic and microscopic study of the following igneous rocks:

Dunite,perodotite,granite. Syenite, Diorite, Gabbro. Dolerite, Rhyolite, Basalt, Pegmatic,

Megascopic and microscopic study of the following sedimentary rocks:

Conglomerate, Breccia, Sandstone, Shale, Limestone and its varieties

SRI VENKATESWARA UNIVERSITY,TIRUPATHI
THREE YEAR B.Sc DEGREE EXAMINATION
Subject: GEOLOGY SEMESTER-III
MODEL QUESTION PAPER
(Igneous Petrology & Sedimentalogy)

Time: Three hours **Marks: 75**

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

1. Write a brief a note on classification and distinguishing features of different types of rocks
2. Explain the following:
   (a) Devitrification (b) Gabbro
3. Describe the composition and constitution of magma
4. Stratification and cementation
5. Write a note on Evaporites
6. Write a note on assimilation of magma
7. Nature and scope of Petrology
8. Explain the following:
   (a) Arkose (b)Pegmatite

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

9. Explain in detail about different forms found in igneous rocks with neat sketches
   (or)
   Give an account of structures exhibited by igneous rocks

10. Write an essay on mica classification of igneous rocks
    (or)
    Define texture? Describe the textures of igneous rocks
11. Write an essay on crystallization of magma

    (or)
    Write a brief note on the origin of igneous

12. Describe the structures of sedimentary rocks with neat sketches
    (or)
    Write an essay on weathering of rocks

13. Explain in detail about calcareous and carbonaceous rocks
    (or)
    Write an essay on rudaceous and arenaceous rocks

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, maculosc, 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, Cliaranockite 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)

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. Petrology of Igneous and Metamorpic rocks. - *Hyndman*

2. Structural Geology - L.U. De Setter -

3. An outline of structural Geology - E.S. Hills

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).

SRI VENKATESWARA UNIVERSITY,TIRUPATHI
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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