3-1-111

SUBJECT: GEOLOGY

SEMESTER-I

Paper- I : Physical Geology &Crystallography

Unit -I

General aspects. Definition of geology - Basic assumptions of Geology - Its relationship with other sciences - Branches of geology - Aim and applications of geology. Earth as a planet: its shape, size, and density - movement and then effects. Origin and age of the earth.

Geological process - exogenic and endogenic. Definition of weathering - types of weathering of rocks - Physical and chemical; Definition of erosion and denudation, cycle of erosion; erosion, transportation and deposition; agents of erosion.

Unit-II

Rivers: Erosion, transportation and deposition of river (fluvial) cycle in different stages - Development of typical land forms by river erosion and deposition. V or V-Shaped valley. U- shaped valley. Waterfall alluvial form, meander, ox-bow lake-flood plane, natural plane, peneplain and deltas. Types of rivers.

Groundwater: Storage of ground water - porosity, permeability, aquifer, water table, zone of saturation, artesian well, spring, geysers - development of typical land form by erosion and deposition by groundwater [Karst toppography] sinkhole, cavern, Stalactities and stalagmites.

Glaciers: Definition of a glacier - types of glaciers - development of typical land forms by glacial erosion and deposition - cirque, hanging valley, Rocks-monadnocks. Morains, drum-line, kames, eskors and varves. Characteristic features of glaciated regions

Unit-III

Seas: offshore profile - land forms of sea - marine deposits and coral reefs. Lacustrine deposits. Atmospheric circulation, weather and climatic changes, land air, sea interaction. Earth's heat budget and global climatic changes.

Wind: Development of characteristic features by wind (arid cycle), erosion and deposition - pedestal rock - mushroom topography - Incelberg - Ventifacts -sand dunes.

Earthquakes: Cause, kinds of earthquake waves, and mode of propagation, intensity of earthquakes, Ritchers scale - seismograph and seismogram. Effects of earthquakes, earthquake zones - Interior of the earth based on seismic theory -Volcanoes: origin, products of Volcanoes.

Continental Drift & Plate tectonics: Theory of Plate tectonics - nature and origin of ocean floor.

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Unit-IV

Definition of a crystal - amorphous and crystalline states. Morphology of Crystals - face, edge, solid angle, interfacial angle. Forms: Simple, combination, closed and open forms. Symmetry: Plane, axis, center. Crystallographic axes. Parameters,indices; crystallographic notation - parameter system of Weiss, index system of Miller.

Unit-V

Classification of crystals into systems

Morphological study of the following classes of symmetry

I. Cubic system - Galena type
II. Tetragonal system - Zircon type
III. Hexagonal system - Beryl type
IV. Trigonal system - Calcite type.
V. Orthorhombic system - Barites type
VI. Monoclinic system - Gypsum type -
VII. Triclinic system - Axinite type

Twinning: Definition of twinning, Laws of twinning and Types of twinning

Text books:

1. Holmes Principles of Physical Geology - D.L. Holmes
2. Physical Geology - A.N. Stracher
3. A book of Physical Geology - A K Datta
4. An Introduction to Crystallography - R.C. Phillips
5. Essential of Crystallography - E. Flint.

References:

1. Basic Physical Geology - E.S. Robinsion
2. The evolving Earth: A text in Physical Geology - E.S. Sawkins. et al.
3. Physical Geology - B.F. Mallory and D.N. Gargo
4. A textbook of mineralogy - E.S. Dana and W.E. Ford

Practical-I- Physical Geology & Crystallography

Interpretation of morphmetric data/drainage systems, Identification of geomorphological features in topographical maps.

Study of symmetry, and form of the Normal classes of seven crystal systems of the following:

I. Cubic system - Normal (Galena)
II. Tetragonal system - Zircon type
III. Hexagonal system - Beryl type
IV. Trigonal system - Calcite type
V. Orthorhombic system - Barites type
VI. Monoclinic system - Gypsum type
VII. Triclinic system - Axinite type

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Chairman (B.O.S.)
(20.....Exams)

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SEMESTER I
CBCS MODEL QUESTION PAPER -2015-2016
THREE YEAR B.Sc DEGREE EXAMINATION
FIRST YEAR EXAMINATION
GEOLOGY PAPER I
PHYSICAL GEOLOGY AND CRYSTALLOGRAPHY

Time: Three hours **Marks: 75**

AAO 14/10

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

1. Define geology and explain different branches of geology
2. Briefly explain the sand dunes
3. Explain the stalactites and stalagmites
4. Describe the products of volcanoes
5. Explain about crystalline and amorphous substances.
6. Closed and open forms
7. Hexagonal pyramids
8. crystal forms of axinite type in triclinic system

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

9. Write an essay on age of the Earth

   OR

   Define weathering. Explain about different types of physical and chemical weathering.

10. Define the term "glacier". And give an account of erosional and depositional Landforms developed by glaciers.

    OR

    Describe the geological action of rivers

11. How earth quakes are formed? Describe its effects and explain the earth quake Waves

    OR

    Write an essay on geological actions of winds

12. Write an essay on the classification of crystals.

    OR

    Describe the symmetry elements and forms of tetragonal system of zircon Type

13. Write an account of symmetry elements and forms of the barite type of the Orthorhombic system

    OR

    Describe the symmetry elements and forms of monoclinic system of gypsum Type.

Signature of the Chairman (B.O.S.) (20.....Exams)