

PUC FIRST YEAR [SCIENCE] SYLLABUS AND CURRICULUM

SUB : GEOLOGY (37)

Sl. No.	Objectives	Units	Sub units/ Chapters	No.of Hours	Learning outcome	Evaluation	Activities
1.	To understand about the subject of Geology, its branches, relation to other branches of Science, application and significance of Geology subject to society.	<u>UNIT I</u> General Geology:	Introduction to Geology. Definition. Relation to other branches of sciences. Branches of Geology. Scope and significance of geology. Applications.	5 Hrs	Meaning of Geology, its status, branches, its impact on Indian economy, understanding scope and significance	By discussion, questioning, enlisting the uses of geology to common man and country's growth	Definition, Listing various branches of geology, role of geology in Indian Economy
2.	To study and understand about the Earth and its position in solar system and other things of universe and origin of earth.	The Earth and its Environment in Space	Universe. Galaxy- Milky way Solar System ó The Sun, Planets, Satellites, Asteroids, Comets, Meteorites The earth, its position in solar system, Theories; Bigbang and Steady state	5 hrs	Understanding about the universe, solar system, earth, its position, origin of earth etc.	Diagrams, charts, visual aids, questionnaire, discussion etc	Drawing sketches, diagrams, observation of sky at night, enlisting different theories of origin of earth. Watching videos.

3.	To acquaint with the different aspects of our mother earth	Parameters of the Earth	Shape- Flat, Spherical, Oblate, Spheroid, Elliptical, Geoidal Concept. Circumference. Diameter- Polar, Equatorial. Density	5 hrs	Acquiring Knowledge about different aspects like shape, circumference, diameter of the earth	Discussing, questioning, etc.	Drawing different shapes of the earth, watching videos about different parameters.
4.	To understand about day and night, rotation of the earth and seasons	Earth Motions	Rotation- Day and Night. Revolution- Seasons, Equinox.	2 hrs	Acquiring Knowledge about day and night, rotation	Discussing, questioning, etc.	Enlisting different seasons, observations
5.	To get the knowledge of different zones of the earth, interior of earth and discontinuities	Zones of Earth	Atmosphere- Composition, Structure, Different layers. Hydrosphere- Constituents, Water Cycle, Evaporation, Precipitation, Percolation, Surface run off. Lithosphere- Crust, Mantle, Core Composition, temperature and density factors Discontinuities- Mohorovicic, Gutenberg	4 hrs	Understanding the different zones of the earth, interior of earth. Water, etc.	Through different diagrams, sketches, visual appraisal, discussion.	Drawing diagrams. Observation of water cycle in different seasons, cloud formation, rainfall, measurement of temperature etc
6.	To study the earth's external surface changes due to different aspects.	<u>UNIT II</u> Exogenous Geological	Weathering- Definition, Types: Mechanical; Spheroidal, Frost action Chemical; Oxidation, Hydration,		Understanding the process of weathering and its impact on earth's	Discussing, questioning, etc	Observation of surrounding hillocks, rocks and observe

		<p>Processes:</p>	<p>Carbonation and Biological. Products of weathering; soil, Scree, Talus</p>	3 hrs	morphology		changes. Collection of weathered rock samples nearby
7.	To understand the geological process and action by various denudation agents.	<p>Geological Agents:</p>	<p>Definition. [a] Erosion ó Deflation, Abrasion & Attrition. Erosional features: Pedestal rocks and Ventifacts.</p>	4 hrs	Acquiring knowledge of geological action of Wind, erosional features, depositional features etc.	Drawing sketches, visual appraisal, discussion, etc.	Observing the action of wind, collection of blown up particles during high velocity wind, collection of samples, photographs of wind weathered features
		<p>Wind</p>	<p>[b] Transportation ó Suspension & Saltation. [c] Depositional features ó Sand dunes : types, Barchans and Loess.</p>	4 hrs			
8.	To study the geological action, process and different geological features produced by the Glaciers,	<p>Glaciers</p>	<p>Definition ó Glaciation. [a] Snow, Neve, Fern, Ice, Snowfield, Snowline, Crevasses & Avalanches. [b] Types ó Valley glaciers, Piedmont glaciers and Continental glaciers. [c] Erosion ó Abrasion, Excavation, Frost wedging, Plucking and Quarrying. [d] Erosional features: Striations, Roches moutonnees, Hanging valleys, U shaped valleys, Cirques, Horns, Arete, Berg Schrund and Ice bergs. [e] Transportation. [f] Deposition ó Glacial drift and Till, Moraines, - Lateral, Medial &</p>	6 hrs	Understanding the geological action of glacier in high altitudes, erosional and depositional features etc.	Drawing sketches, visual appraisal, discussion, etc.	Collection of pictures, photographs, using internet etc.

9.	To understand the geological action of water gushing through rivers and how it modifies the earth's morphology producing various erosional and depositional features	RIVERS	<p>Terminal, Drumlins, Eskers, Kames and Kettles</p> <p>Definition, Sources. [a] Head ó Tributaries, Channel ó Course, Mouth ó Distributaries. [b] Stages of River: Initial, Youth, Mature and Old. [c] Erosion ó Hydraulic action, Corrasion, Corrosion and Solution. [d] Erosional features: Gorges, Canyons, Waterfalls, Pot-holes, V Shaped valleys, Meanders and Ox-bow lakes. [e] Transportation: Saltation, Solution and Suspension, [f] Depositional features ó Alluvial fans, Natural levees, Flood plain and Delta.</p>	6 hrs	Getting acquaintance with the various stages of river, their action, features produced by erosion and deposition. Flood monitoring	Drawing sketches, visual appraisal, discussion, etc. Guest speeches	Collection of data of streams, rivers nearby and measurement of their levels during different season and noting down their actions. Visiting some rivers and acquiring knowledge.
10.	To learn the significance of groundwater, its occurrence, wells, conservation of ground water for future, etc.	UNDER-GROUND WATER	<p>Definition. [a] Hydrological properties ó Porosity, Permeability, Specific yield and Specific retention. [b] Zones ó Zone of aeration, Zone of saturation and Water table. [c] Types of Aquifers ó Aquiclude, Aquifer and Aquitard. [d] Wells and Springs. [e] Erosion, Transportation and Deposition ó Stalactites, Stalagmites and Karst topography.</p>	6 hrs	Understanding the process of rain-water converting itself into ground-water. Subsurface-zones, significance of water table wells, limestone features.	Through different diagrams, sketches, visual appraisal, discussion.	Collection of field photographs of stalactites, stalagmites. Measurement of Water table level in surrounding areas, educating the local people about the conservation of

11.	To study the entire exogenous processes and their impact	Significance of Exogenous Geological Processes.	Operation, influencing factors and agencies; results	3 hrs	To acquire the knowledge of geological processes	Through different diagrams, sketches, visual appraisal,	groundwater. Collection of pictures, photographs, using internet etc.
12.	To understand about volcanoes	UNIT III Endogenous Geological Process VOLCANOES	Definition. [a] Structure. [b] Types ó Central, Fissure, Active, Dormant, Extinct and Mud volcano. [c] Products ó Gaseous, Liquid and Solid. [d] Distribution ó Circum ó Pacific Belt and Alpine ó Himalayan Belt	4 hrs	Studying the activities of volcanoes. Their impact on surface.	Questioning and discussion, acquiring knowledge of volcanoes through intern et	List out the different active volcanoes in different parts of the world. Their impact on surrounding areas. Disaster management
13.	To acquire the knowledge of Earthquakes in detail	EARTHQUAKES	Definition. [a] Causes ó Surface, Volcanic and Tectonic. [b] Effects ó Civil and Geological. [c] Earthquake waves, Seismogram, Seismograph and Richter's Scale.				
14.	To understand the concepts of Natural Hazards	NATURAL		4 hrs	Acquiring the	Questioning and	List out the

		HAZARDS: A Geological Concept	[a] Earthquake. [b] Volcanoes. [c] Floods. [d] Draught. [e]Tsunamis. [f] Landslides.	6 hrs	knowledge of natural hazards and help the society during natural calamities	discussion, acquiring knowledge of natural hazards in detail and studying the concept of disaster management	disasters occurred during last 20 years around your oplace and monitor the natural hazards or calamities in near future.
15.	To acquire the knowledge of minerals, their formation and their physical properties and different groups of minerals	UNIT IV MINERALOGY	Introduction, Definition of Mineral. Physical Properties of Minerals – Colour,Streak, Luster, Diaphaneity, Form Cleavage, Fracture, Hardness, Tenacity and Specific Gravity Study of Following Mineral Groups: [a] Quartz ó Rose quartz, Rock crystal, Milky quartz, Amethyst & Opal. [b] Feldspar Group ó Orthoclase, Microcline & Plagioclase. [c] Mica Group ó Muscovite & Biotite. [d] Mohø Scale of Hardness ó Talc, Gypsum, Calcite, Fluorite, Apatite, Orthoclase, Quartz, Topaz, Corundum &Diamond.	2 hrs 6 hrs 6 hrs	Understanding the minerals, their formation and their physical properties and different groups of minerals	Questioning and discussion, studying mega specimens	Listing the naturally occurring minerals with their distinguishing properties
16.	To acquire the knowledge of crystals, their formation, their parts, symmetry characters, and six crystallographic systems	CRYSTALLOGRA PHY	Introduction, Definition of Crystal. [a] States of Matter ó Crystal, Crystalline & Amorphous. [b] Crystal parts ó Faces, Edges & Solid angles, their relationship ó Eulerø formula $F + A = E + 2$.	6 hrs	Understanding the crystals, their formation, parts, symmetry characters, and six crystallographic systems	Through different diagrams, sketches, visual appraisal,	Writing down the different crystal systems along with their symmetry characters. Axes

			<p>[c] Interfacial angle & its measurements by Contact Goniometer.</p> <p>[d] Symmetry characters of Plane, Axis & Centre.</p> <p>[e] Study of Six Crystallographic Systems based on crystallographic axis.</p>	6 hrs			and forms
17.	To acquire the knowledge of Environment, how it is polluted, and also disaster management	<p>UNIT V</p> <p>Environmental Geology:</p> <p>Environmental Pollution:</p>	<p>Definition, Scope & Importance.</p> <p>Introduction, Definition. Study of Causes, Effects & Controlling Measures of the following pollution Types of</p> <p>[a] Air Pollution. [b] Water Pollution. [c] Soil Pollution. [d] Noise Pollution. [e] Nuclear hazards</p>	2 hrs	Acquiring the knowledge of Environment, how it is polluted, and also disaster management	Questioning and discussion, acquiring knowledge of environment, its pollution, in detail and studying the concept of natural disaster management	List out the disasters occurred during last 20 years around your place and monitor the natural hazards or calamities in near future.
		DISASTER MANAGEMENT	<p>Definition.</p> <p>[a] Earthquake. [b] Volcanoes. [c] Floods. [d] Draught. [e] Landslides.</p>	6 hrs			
18.	Study of different geological organisations in India	Organizations in	<p>Geological Survey of India. [G.S.I] Department of Mines & Geology. [D.M.G] Mysore Minerals Limited. [M.M.L] Oil & Natural Gas Commission. [O.N.G.C]</p>	5 hrs			Writing down all the details in a record book

19.		<p>the field of geology:</p> <p>I YEAR PUC GEOLOGY PRACTICALS:</p>	<p>Atomic Energy Commission. [A.E.C] National Institute of Oceanography. [N.I.O] Indian Space Research Organization. [I.S.R.O] National Mineral Development Corporation. [N.M.D.C] National Remote Sensing Agency. [N.R.S.A] National Geophysical Research Institute [N.G.R.I] Mineral and Metal Trading Corporation [M.M.T.C] National Remote Sensing Corporation [N.R.S.C]</p> <p>CRYSTALLOGRAPHY: Study of the mathematical relationship of the crystal elements. (Euler's formula) ó 1 Pr. Measurement of interfacial angles of crystals using Contact Goniometer. ó 1 Pr Classification of crystals based on axial character. ó 3 Pr. Classification of crystals based on symmetry character. ó 3 Pr.</p> <p>MINERALOGY: Study of physical properties of minerals. ó 4 Pr Identification of the minerals as mentioned in the theory.</p>	4 hrs			<p>Writing down all the details in a record book</p> <p>Writing down all the details in a record book</p>
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