



# BANGLADESH YOUTH ENVIRONMENTAL INITIATIVE

## Syllabus for NEO'15 Divisional Round

- The textbook to be followed for NEO'15 is "High School Earth Science". You can find the book on [wikibooks.org](http://wikibooks.org), or [byei.org/neo](http://byei.org/neo).
- The syllabus may seem very big, but don't be scared! It will get easier as you study.
- Try to cover as many sections for the exam as possible.
- Read the **Lesson Summary** at the end of every section to get a basic idea of all concepts.
- Try to get some general knowledge about Bangladesh's environment.
- The examination paper will have 80 multiple choice questions -  
Geosphere 20, Hydrosphere 15, Atmosphere 10, Astronomy 10, Environment 25.

## Geosphere

### Chapter 2: Studying Earth's Surface

#### 2.1 Introduction to Earth's Surface

Direction  
Topography  
Landforms  
Continents  
Ocean Basins

#### 2.2 Modeling Earth's Surface

Map Coordinates  
Globe

#### 2.3 Topographic Maps

What is a Topographic Map?

#### 2.4 Using Satellites and Computers

Satellite Images  
Global Positioning System

### Chapter 3: Earth's Minerals

#### 3.1 What are Minerals?

What are Minerals?  
Groups of Minerals (common minerals with chemical formula)

#### 3.2 Identification of Minerals

Other Identifying Characteristics

#### 3.3 Formation of Minerals

Formation from Magma and Lava  
Formation from Solutions  
Minerals from Salt Water

#### 3.4 Mining and Using Minerals

Mining and the Environment  
Gemstones and Their Uses  
Other Useful Minerals

### Chapter 4: Rocks

#### 4.1 Types of Rocks

The Rock Cycle  
Three Main Categories of Rocks  
Processes of the Rock Cycle

#### 4.3 Sedimentary Rocks

Concept of Sediments

#### 4.4 Metamorphic Rocks

Concept of Metamorphism

### Chapter 6: Plate Tectonics

#### 6.1 Inside Earth

Exploring Earth's Interior  
Concept of Crust, Lithosphere, Mantle and Core

#### 6.2 Continental Drift

The Continental Drift Idea

#### 6.3 Seafloor Spreading

The Seafloor Spreading Hypothesis

#### 6.4 Theory of Plate Tectonics

Earth's Tectonic Plates  
How Plates Move  
Plate Boundaries



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## Chapter 7: Earthquakes

### 7.1 Stress in the Earth's Crust

Causes and Types of Stress  
Concept of Folds and Faults  
Stress and Mountain Building

### 7.2 Nature of Earthquakes

Causes of Earthquakes  
Earthquake Zones  
Earthquake Zones of Bangladesh (out of syllabus)  
Tsunami

### 7.3 Measuring and Predicting Earthquakes

Basic idea of Magnitude and Intensity

### 7.4 Staying Safe in Earthquakes

All

## Chapter 8: Volcanoes

### 8.1 Volcanic Activity

All

### 8.2 Volcanic Eruptions

Concept of Magma and Lava  
History of Volcanic Activities

### 8.4 Volcanic Landforms and Geothermal Activity

Basic idea of geothermal activity

## Chapter 9: Weathering and Formation of Soil

### 9.1 Weathering

What is Weathering?

### 9.2 Soils

Characteristics and Importance of Soil  
Soil Formation  
Soil Horizons and Profiles  
Soil Conservation

## Chapter 10: Erosion and Deposition

### 10.1 Water Erosion and Deposition

Erosion from Runoff  
Stream and River Erosion – Stages of Streams  
Stream and River Deposition

### 10.2 Wave Erosion and Deposition

Basic idea of Wave Erosion and Deposition  
Protecting Shorelines

### 10.4 Glacial Erosion and Deposition

Basic idea of Glacial Erosion and Deposition

### 10.5 Erosion and Deposition by Gravity

Contributing Factors  
Landslide  
Prevention and Awareness of Landslide  
Landslide condition of Bangladesh (out of syllabus)

## Chapter 11: Evidence About Earth's Past

### 11.1 Fossils

How Fossils Form  
Index Fossils and Living Fossils  
Clues from Fossils

### 11.2 Relative Ages of Rocks

Superposition of Rock Layers  
Original Horizontality  
Lateral Continuity  
Superposition

Cross-Cutting Relationships

### 11.3 Absolute Ages of Rocks

Age of Earth  
Radioactive Decay  
Carbon Dating

## Chapter 12: Earth's History

### 12.1 Geologic Time Scale

Geologic Time  
Geologic Time Scale

### 12.2 Early Earth

All

### 12.3 History of Earth's Life Forms

Earth's Diversity  
Adaptations and Evolution



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## Hydrosphere

### Chapter 13: Earth's Fresh Water

**13.1** Full Section

#### **13.2 Surface water**

Stream and river

Wetland

Floods

#### **13.3 Ground water**

### Chapter 14

**14.1** Full; only a basic concept of water columns required.

**14.2** Full; only a basic concept of surface and deep currents required.

**14.3** Full; Features of sea floor **NOT** included.

### Chapter 21

Full Chapter; "California Water Resources" from Section 21.1 is **NOT** included.

## Atmosphere

### Chapter 15

#### **15.1**

Significance of the Atmosphere

Composition of Air

Pressure and Density

#### **15.2 15.3 15.4**

Only basic concepts of all sections

### Chapter 16

#### **16.1**

Basic concepts of all, Clouds

#### **16.2**

Basic

#### **16.3**

Thunderstorms, Tornadoes, Cyclones, Extreme Heat and Drought

#### **16.4**

Basic idea of barometer

### Chapter 17

#### **17.1**

What is Climate?

Latitude

Altitude and Mountain Ranges

#### **17.2**

Very basic ideas

#### **17.3**

Short-Term Climate Oscillations (terms only)

Causes of Climate Change

Solar Variation

Plate Tectonics

Asteroid Impacts

Rising Atmospheric Greenhouse Gases

Global Warming

### Chapter 22

All



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## Astronomy

### Chapter 23 Observing and Exploring Space

#### 23.1 Telescopes

- Electromagnetic Radiation
- The Speed of Light
- Light-Years
- Looking Back in Time
- The Electromagnetic Spectrum
- Types of Telescopes (Basics especially Space Telescopes)
- Galileo's Observations
- Observations with Modern Telescopes

#### 23.2 Early Space Exploration

- How Rockets Work
- Satellites
- Newton's Law of Universal Gravitation
- Types of Orbits
- Table 23.1: Space Race Timeline
- The International Space Station
- Earth Science Satellites

### Chapter 24: Earth, Moon, and Sun

#### 24.1 Planet Earth Full

#### 24.2 Earth's Motions Full

#### 24.3 Earth's Moon

- How the Moon Formed
- Lunar Characteristics
- The Lunar Surface

#### 24.4 The Sun

- The Sun's 'Atmosphere'

#### 24.5 The Sun and the Earth-Moon System

- Earth's Seasons
- Solar Eclipses
- Lunar Eclipse
- The Phases of the Moon
- The Tides

### Chapter 25: The Solar System

#### 25.1 Introduction to the Solar System

- Geocentric-Heliocentric Universe
- Table 25.1
- What Is (and Isn't) a Planet?
- The Size and Shape of Orbits

- The Role of Gravity
- A Giant Nebula

#### 25.2 Inner Planets – Basics

#### 25.3 Outer Planets – Basics

#### 25.4 Other Objects in the Solar System

- The Asteroid Belt
- Meteoroids
- Meteorites
- Comets
- Dwarf Planets

### Chapter 26: Stars, Galaxies, and the Universe

#### 26.1 Stars

- Constellations
- Nuclear Fusion
- Formation of Stars
- Red Giants and White Dwarfs
- Supergiants and Supernovas
- Neutron Stars and Black Holes

#### 26.2 Galaxies

- Star Systems
- Types of Galaxies – Basics
- The Milky Way Galaxy
- Where We Are

#### 26.3 The Universe

- Expansion of the Universe
- Redshift
- The Expanding Universe
- The Big Bang Theory
- Dark Matter and Dark Energy



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## Environment

### Chapter 5

#### Earth's Energy

- Energy Resources
- Types of Energy Resources
- Types of Renewable Resources
- Nonrenewable Energy Resources
- Formation of Fossil Fuels
- Coal, oil, Natural Gas
- Problems with Fossil Fuels
- Nuclear Energy
- Solar Energy
- Water Power
- Wind Power
- Biomass
- Geothermal Energy

### Chapter 18

#### Ecosystems and Human Populations

- Ecosystems
- Biological Communities
- Flow of Energy in Ecosystems
- Relationships Between Species
- The Carbon Cycle and the Nitrogen Cycle
- Short Term Cycling of Carbon
- Long Term carbon cycle
- Carbon Sinks and Carbon Sources
- Human Actions Impact the Carbon Cycle
- Why Do We Need to Know About the Carbon Cycle?
- The Nitrogen Cycle
- Human Populations
- Human Population Growth
- Humans and the Environment
- Sustainable Development

### Chapter 19

#### Human Actions and the Land

- Loss of Soils
- Causes of Soil Erosion
- Human-caused Erosion
- Preventing Soil Erosion
- Pollution of the Land
- What is Hazardous Waste?
- Impacts of Hazardous Waste

### Chapter 20

#### Human Actions and Earth's Resources

- Use and Conservation of Resources
- Renewable versus Non-Renewable Resources
- Common Materials We Use From the Earth
- Human Population and Resource Use
- Resource Availability
- Conserving Natural Resources
- Obtaining Energy
- Energy Efficiency

### Chapter 21

#### Human Actions and Earth's Waters

- Humans and the Water Supply
- Problems with Water Distribution
- Water Pollution
- Protecting the Water Supply

### Chapter 22

#### Human Actions and the Atmosphere

- Air Pollution
- Effects of Air Pollution
- Reducing Air Pollution