

Geography for General Studies Detailed Contents List

Geomorphology for General Studies UPSC Civil Services

1. Interior of The Earth

- 1.1 The study of the earth's interior is essential
- 1.2 Direct Sources of information about the interior
- 1.3 Indirect Sources of information about the interior
- 1.4 Seismic waves
 - How are earthquake waves produced?
- 1.5 Types of Seismic waves or earthquake waves
 - Body waves
 - Surface waves (L-Waves)
 - How do seismic waves help in understanding the earth's interior?
- 1.6 The internal structure of the Earth
 - The Crust
 - Lithosphere
 - The Mantle
 - Asthenosphere
 - The Outer Core
 - The Inner Core
 - Seismic Discontinuities

2. Earth's Magnetic Field

- 2.1 Dynamo theory: Generation of Earth's Magnetic Field and Sustaining it
- 2.2 Magnetic poles
- 2.3 Geomagnetic reversal
 - Normal and Reversed field
 - The current location of the Magnetic Poles
- 2.4 Compass
 - Magnetic declination
 - Magnetic Inclination or Magnetic Dip
- 2.5 Geomagnetic poles
- 2.6 Magnetosphere
 - Auroras
 - Geomagnetic storms
- 2.7 Van Allen radiation belt
- 2.8 Magnetic field of other solar system objects

3. Geomorphic Movements

3.1 Endogenic Geomorphic Movements

- The force behind Endogenic Movements
- Classification of Endogenic movements
- Diastrophism
- Sudden Movements

3.2 Exogenic Geomorphic Movements

- The force behind Exogenic Movements
- Denudation
- Weathering

4. Tectonics

4.1 Important concepts that tried to explain the tectonic processes

4.2 Continental Drift Theory (Alfred Wegener, 1922)

- Forces behind the drifting of continents, according to Wegener
- Evidence in support of Continental Drift
- Drawbacks of Continental Drift Theory

4.3 Seafloor Spreading

- Convection Current Theory
- Paleomagnetism
- The concept of Sea Floor Spreading
- Evidence for Seafloor Spreading

4.4 Plate Tectonics

- Major tectonic plates
- Minor tectonic plates
- Interaction of Plates
- Evidence in Support of Plate Tectonics
- The significance of Plate Tectonics
- Movement of The Indian Plate
- Movement

4.5 Comparison: Continental Drift – Sea Floor Spreading – Plate Tectonics

5. Convergent Boundary

5.1 Ocean-Ocean Convergence or The Island-Arc Convergence

- Formation of the Philippine Island Arc System
- Formation of the Indonesian Archipelago
- Formation of the Caribbean Islands
- Formation of Isthmus of Panama
- Formation of the Japanese Island Arc
- Explain the formation of thousands of islands in Indonesian and Philippines archipelagos (20 marks – Mains 2014)

- In spite of extensive volcanism, there is no island formation along the divergent boundary (mid-ocean ridge)

5.2 Continent-Ocean Convergence or The Cordilleran Convergence

- Formation of Continental Arcs
- Formation of Fold Mountains (Orogeny)
- Formation of the Andes

5.3 Formation of the Rockies

5.4 Continent-Continent Convergence or The Himalayan Convergence

- Formation of the Himalayas and the Tibetan Plateau
- Formation of Alps, Urals, Appalachians and the Atlas Mountains
- Volcanism and Earthquakes in Continent-Continent Convergence
- Why are the world's fold mountain systems located along the margins of continents? Bring out the association between the global distribution of Fold Mountains and the earthquakes and volcanoes.

5.5 Continent-Arc Convergence or New Guinea Convergence

6. Divergent boundary

6.1 Evolution – Formation of Rift Valleys, Rift Lakes, Seas and Oceans

6.2 Rift valley lakes

6.3 Great Rift Valley

- East African Rift Valley

7. Classification of Mountains

7.2 Fold Mountains

- 'Fold' in geology
- Classification of fold mountains
- Characteristics of Fold Mountains

7.3 Block Mountains

- 'Fault' in Geology

7.4 Volcanic mountains

7.5 Significant mountains and mountain ranges

- Longest Mountain Ranges
- The Andes
- The Rockies
- The Great Dividing Range
- Transantarctic Mountains
- The Ural Mountains
- Atlas Mountains
- The Himalayas
- The Alps
- Highest mountain peaks

1. Volcanism

1.1 Causes of Volcanism

1.2 Lava types

- Andesitic or Acidic or Composite or Stratovolcanic lava
- Basic or Basaltic or Shield lava

1.3 Volcanic Landforms

- Extrusive Volcanic Landforms
- Intrusive Volcanic Landforms

1.4 Volcanism Types

- Exhalative (vapour or fumes)
- Effusive (Lava outpouring)
- Explosive (Violent ejection of solid material)
- Subaqueous Volcanism

1.5 Eruptive Volcanism Types

- Hawaiian Eruption
- Icelandic Eruptions
- Strombolian Eruption
- Vulcanian Eruption
- Plinian Eruption
- Pelean Eruption

1.6 Hotspot Volcanism

- Mantle Plumes

1.7 Geysers and Hot Springs

1.8 Extinct, Dormant and Active volcanoes

1.9 Distribution of Earthquakes and Volcanoes across the World

- Pacific Ring of Fire
- Other regions
- Mediterranean volcanism
- Volcanos in India

1.10 Destructive Effects of Volcanoes

1.11 Positive Effects of Volcanoes

1.12 Rocks

- Igneous Rocks or Primary rocks
- Sedimentary Rocks or detrital rocks
- Metamorphic Rocks

2. Earthquakes

2.2 Causes of Earthquakes

2.3 Earthquakes based on the depth of focus

- Shallow-focus earthquake
- Deep-focus earthquake

2.4 Distribution of Earthquakes

2.5 Richter magnitude scale

2.6 Effects of Earthquakes

3. Tsunami

3.1 Mechanism of tsunami waves

3.2 Properties of Tsunami Waves

3.3 2004 Indian Ocean Tsunami

- Plate tectonics
- Tsunami waves
- Shifts in Geography

3.4 Warning Systems

4. Soil erosion and Landforms

4.1 Water Erosion

- Raindrop erosion or splash erosion
- Sheet erosion
- Rill and gully erosion
- Streambank erosion
- Landslide
- Coastal erosion
- Glacial erosion

4.2 Wind Erosion

4.3 Fluvial Landforms and Cycle of Erosion

- Fluvial Erosional Landforms
- Drainage systems (drainage patterns)
- Fluvial Depositional Landforms

4.4 Karst Landforms and Cycle of Erosion

- Sinkhole/Swallow Hole
- Polje/Blind Valley
- Cavern
- Arch/Natural Bridge
- Sinking Creeks/Bogas
- Stalactite and Stalagmite
- Dry Valley/Hanging Valley/Bourne

- The Karst Cycle of Erosion

4.5 Marine Landforms and Cycle of Erosion

- Marine Erosional Landforms
- Marine Depositional Landforms
- Coastlines

4.6 Glacial Landforms and Cycle of Erosion

- Glacial Erosional Landforms
- Glacial Depositional Landforms
- Glacial Cycle of Erosion

4.7 Arid Landforms and Cycle of Erosion

- Erosional Arid Landforms
- Arid Depositional Landforms

5. Lakes

5.1 Classification of Lakes

5.2 Lakes and Man

5.3 Important Lakes on Earth

6. Plateau

6.1 Economic significance of plateaus

6.2 Plateau Formation

- Thermal expansion
- Crustal shortening
- Volcanic flood basalts
- Others

6.3 Plateau Types

- Dissected plateau
- Volcanic plateau
- Others

6.4 Major plateaus of the World

- Others

Climatology for General Studies UPSC Civil Services Exam

1. Latitudes and Longitudes

1.1 Latitude or Parallel

- Important parallels of latitudes

- Latitudinal Heat zones of the earth

1.2 Longitude or Meridian

- Longitude and Time
- Standard Time and Time Zones
- Indian Standard Time
- The International Date Line

1.3 Comparison: Latitude vs Longitude

2. Motions of the earth

2.1 Rotation of Earth

- Shape of the earth

2.2 Revolution

- Solstice
- Equinox
- Perihelion and Aphelion
- Eclipse

3. Atmosphere

3.1 Evolution of Earth's atmosphere

3.2 Composition of Atmosphere

- Permanent Gases of the Atmosphere
- Important constituents of the atmosphere

3.3 Structure of Atmosphere

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere

3.4 Importance of Earth's Atmosphere

4. Temperature Distribution on Earth

4.1 Ways of Transfer of Heat Energy

- Radiation
- Conduction
- Convection

4.2 Factors Affecting Temperature Distribution

- The Angle of Incidence or the Inclination of the Sun's Rays
- Duration of Sunshine
- Transparency of Atmosphere

- Albedo
- Land-Sea Differential
- Prevailing Winds
- Aspects of Slope
- Ocean Currents
- Altitude
- Earth's Distance from Sun

4.3 The Mean Annual Temperature Distribution

- General characteristics of isotherms
- General Temperature Distribution
- Seasonal Temperature Distribution

4.4 Latitudinal Heat Balance

4.5 Heat Budget

4.6 Vertical Distribution of Temperature

- Latent Heat of Condensation
- Lapse Rate
- Adiabatic Lapse Rate (ALR)
- Temperature Inversion

5. Pressure Systems and Wind Systems

5.1 Atmospheric pressure

5.2 Atmospheric pressure cells

5.3 Isobars

- Closed Isobars or Closed Pressure centres

5.4 Vertical Variation of Pressure

5.5 Factors affecting Wind Movement

- Pressure Gradient Force
- Buoyant force
- Frictional Force
- Coriolis force
- Centripetal Acceleration

5.6 Horizontal Distribution of Pressure

- Equatorial Low-Pressure Belt or 'Doldrums'
- Sub-Tropical High-Pressure Belt or Horse Latitudes
- Sub-Polar Low-Pressure Belt
- Polar High-Pressure Belt
- Factors Controlling Pressure Systems
- Pressure belts in July
- Pressure belts in January

5.7 Pressure systems and General Circulation

- Hadley Cell

- Ferrel Cell
- Polar Cell

5.8 Classification of Winds

- Primary winds or Prevailing Winds or Planetary Winds
- Secondary or Periodic Winds
- Land Breeze and Sea Breeze
- Valley Breeze and Mountain Breeze
- Tertiary or Local Winds

6. Hydrological Cycle (Water Cycle)

6.1 Water Vapour in Atmosphere

- Humidity

6.2 Evaporation

- Factors Affecting Rate of Evaporation

6.3 Condensation

- Processes of Cooling for Producing Condensation

6.4 Forms of Condensation

- Dew
- White Frost
- Fog
- Mist
- Smog
- Clouds

6.5 Precipitation

6.6 Types of Rainfall

- Convictional Rainfall
- Orographic Rainfall
- Frontal Rainfall
- Cyclonic Rain
- Monsoonal Rainfall
- World Distribution of Rainfall

7. Thunderstorm

- Stage 1: Cumulus stage
- Stage 2: Mature stage
- Stage 3: Dissipating stage

7.2 Types of Thunderstorms

- Thermal thunderstorm
- Orographic thunderstorm
- Frontal thunderstorm

- Single-cell thunderstorm (Isolated thunderstorm)
- A multi-cell thunderstorm
- A supercell thunderstorm

7.3 Tornado

- Formation
- Waterspout
- Distribution of tornadoes

7.4 Lightning and thunder

- Thunder
- Lightning from cloud to Earth
- Lightning deaths

7.5 Hailstorm

- Favourable conditions for hail formation
- Formation of hail

7.6 Hazards posed by thunderstorms and associated phenomenon

Climatology for General Studies UPSC Civil Services Exam

1. Tropical Cyclones

1.1 Conditions necessary for the Formation of a Tropical Cyclone

- Good Source of Latent Heat
- Coriolis Force
- Low-level Disturbances
- Temperature Contrast Between Air Masses
- Wind Shear
- Upper Air Disturbance

1.2 Convective Cyclogenesis (Development of Tropical Cyclones)

- Mechanism – Early stage
- Mechanism – Mature stage

1.3 Breeding Grounds for Tropical Cyclones

- Regional names for Tropical Cyclones

1.4 Path of Tropical Cyclones

- Which sector of the cyclone experiences strongest winds?

1.5 Why only a fewer cyclones form over the Arabian Sea as compared to the Bay of Bengal?

1.6 Tropical Cyclone Scale

- Tropical Cyclone Scale by Indian Meteorological Department

1.7 Damage associated with Tropical Cyclones

- Floods
- Wind
- Storm surge
- States Vulnerable to Cyclones

1.8 Positive effects of Tropical Cyclones

1.9 Naming of Cyclones

- Northern Indian Ocean Region

1.10 Warning of Tropical Cyclones

- 4-stage IMD warning system for tropical cyclones

2. Jet streams

2.1 Explanation of Jet Streams

- Geostrophic Wind
- Upper tropospheric westerlies
- High velocity
- Meandering

2.2 Permanent jet streams

- Subtropical jet stream (STJ)
- Polar front jet (PFJ)

2.3 Temporary jet streams

- The Somali Jet
- The Tropical Easterly Jet or African Easterly Jet

2.4 Influence of Jet Streams on Weather

- Jet Streams and Weather in Temperate Regions

2.5 Jet Streams and Aviation

3. Temperate Cyclones

3.1 Air Masses

- Source regions
- Conditions for the formation of Air Masses
- Air masses based on Source Regions
- Influence of Air Masses on World Weather

3.2 Fronts

- Front Formation
- Classification of Fronts

3.3 Origin and Development of Temperate Cyclones

- Polar Front Theory
- Seasonal Occurrence of Temperate Cyclones

- Distribution of Temperate Cyclones
- Characteristics of Temperate Cyclones

4. Tropical Cyclones and Temperate Cyclones — Comparison

5. Polar Vortex

5.1 Polar Vortex Cold Wave

- How it slips

5.2 Polar Vortex and Ozone Depletion at South Pole

- Ozone depletion

6. El Nino

6.1 Normal Conditions

- Walker circulation (Normal Years)

6.2 During El Nino year

- El Nino Southern Oscillation (ENSO)
- Effects of El Nino
- El Nino impact on Indian Monsoons
- Indian Ocean Dipole effect (Not every El Nino year is same in India)

6.3 El Niño Modoki

6.4 La Nina

- Effects of La Nina

7. Koppen's Scheme of Classification of Climate

7.2 A – Tropical Humid Climates

- Tropical Wet Climate (Af: A – Tropical, f – no dry season)
- Tropical Monsoon Climate (Am: A – Tropical, m – monsoon)
- Savanna or Tropical Wet and Dry Climate (Aw: A – Tropical, w – dry winter)

7.3 B – Dry Climate

- Hot Desert Climate (BWh: B – Dry, W – Desert, h – low latitude)
- Mid-Latitude Desert Climate (BWk: B – Dry, W – Desert, k – high latitude)
- Steppe or Temperate Grassland Climate (BSk: B – Dry, S – Steppe, k – high latitude)

7.4 C – Warm Temperate (Mid-latitude) Climates

- Mediterranean Climate (Cs: C – Warm Temperate, s – Dry summer)
- Warm Temperate Eastern Margin Climate (Cfa)
- British Type Climate or Cool Temperate Western Margin Climate (Cf)

7.5 D – Cold Snow-forest Climates

- Taiga Climate or Boreal Climate (Dfc: f – no dry season, c – cold summer)
- Laurentian Climate or Cool Temperate Eastern Marine Climate (Dfb)

7.6 E – Cold Climates

- Tundra Climate or Polar Climate or Arctic Climate

7.7 Questions

- Previous prelims questions
- Descriptive questions

Oceanography for General Studies UPSC Civil Services Exam

1. Ocean Relief

1.1 Major Ocean Relief Features

- Continental Shelf
- Continental Slope
- Continental Rise
- Deep Sea Plain or Abyssal Plain

1.2 Minor Ocean Relief Features

- Oceanic Deeps or Trenches
- Mid-Oceanic Ridges or Submarine Ridges
- Abyssal Hills
- Submarine Canyons
- Atoll
- Bank, Shoal and Reef

2. Major Oceans and Seas

2.1 Oceans of the World by Size

2.2 The Pacific Ocean

2.3 The Atlantic Ocean

2.4 The Indian Ocean

2.5 Marginal Seas

- Human Impact on marginal seas
- Biomass Production and Primary Productivity
- Water Circulation in Marginal Seas

2.6 Bays, gulfs, and Straits

- Bays
- Gulfs
- Straits
- Isthmus

3. Ocean Movements

3.1 Ocean Currents

- Primary Forces Responsible for Ocean Currents
- Secondary Forces Responsible for Ocean Currents
- Types of Ocean Currents
- Pacific Ocean Currents
- Phytoplankton and Fishing
- Atlantic Ocean Currents
- Indian Ocean Currents
- Effects of Ocean Currents
- Desert Formation and Ocean Currents

3.2 Tides

- Tidal Bulge: Why there are two tidal bulges?
- Types of Tides
- Importance of Tides
- Characteristics of Tides
- Tidal bore
- Impact of Tidal Bore

4. Temperature Distribution of Oceans

4.1 Source of Heat in Oceans

4.2 Factors Affecting Temperature Distribution of Oceans

4.3 Vertical Temperature Distribution of Oceans

- Thermocline
- Three-Layer System

4.4 Horizontal Temperature Distribution

4.5 General behaviour

4.6 Range of Ocean Temperature

- Sunspot

5. Ocean Salinity

5.2 Factors Affecting Ocean Salinity

- Horizontal distribution of salinity

5.3 Vertical Distribution of Salinity

6. Coral Reefs

6.1 Coral Reef Relief Features

- Fringing Reefs (Shore Reefs)
- Barrier Reefs
- Atolls

6.2 Development of Major Coral Reef Types

6.3 Ideal Conditions for Coral Growth

- Distribution of Coral Reefs

6.4 Corals and Zooxanthellae

- Symbiotic Relationship Between Corals and Zooxanthellae

6.5 Coral Bleaching or Coral Reef Bleaching

- Ecological Causes of Coral Bleaching
- Spatial and temporal range of coral reef bleaching

7. Resources from the Ocean

7.1 Ocean Deposits

- Terrigenous Deposits
- Pelagic Deposits

7.2 Mineral Resources

- Mineral deposits found on continental shelves and slopes
- Mineral deposits found on deep sea floor

7.3 Energy Resources

7.4 Fresh Water

7.5 Biotic Resources

7.6 United Nations International Conferences on the Law of the Sea (UNCLOS)

- Territorial waters
- Contiguous Zone or Pursuit Zone
- Exclusive Economic Zone (EEZ)
- High Seas
- Land Disputes in South China Sea: Parcel Islands and Spratly Islands

Indian Geography for General Studies UPSC Civil Services Exam

1. India as a Geographical Unit

1.2 India's Frontiers

1.3 Major Physical Divisions of India

2. Rock System Based on Geological History of India

2.1 Archaean Rock System (Pre-Cambrian Rocks)

- Archaean Gneisses and Schists (4 billion years old)
- Dharwar System (1 to 4 billion years old)
- Purana Rock System (600 to 1400 million years old)

2.2 Dravidian Rock System (Palaeozoic)

- Carboniferous rocks (350 million years)

2.3 Aryan Rock System

- Gondwana System
- Jurassic System
- Deccan Trap
- Tertiary System

3. Himalayan Ranges

3.2 Shiwalik Range

- Formation (Formation of Himalayas explained in C-C Convergence)

3.3 The Lesser Himalayas or The Middle Himalayas or The Himachal

- Important Ranges in the Lesser Himalayas

3.4 The Greater Himalaya

- Passes in the Greater Himalayas

3.5 The Trans Himalayas

- Ranges in The Trans Himalayas

3.6 Purvanchal or Eastern Hills

3.7 Himalayas – Regional Divisions

- Punjab Himalayas
- Western Himalayas
- Central Himalayas
- Eastern Himalayas

3.8 Important Valleys in the Himalayas

- Karewas

3.9 Snow in the Himalayas – Snowline

3.10 Glaciers in the Himalayas

3.11 The significance of the Himalayas

3.12 Major Passes in Himalayas and Indian Sub-continent

4. Indo-Gangetic-Brahmaputra Plain

4.1 The formation of Indo-Gangetic-Brahmaputra Plain

4.2 Features of Indo-Gangetic-Brahmaputra Plain

- Divisions of Indo-Gangetic-Brahmaputra Plain
- Regional Divisions of the Great Plains
- The significance of the Plain

5. Peninsular Plateau

5.1 Minor Plateaus in the Peninsular Plateau

- Marwar Plateau or Mewar Plateau
- Central Highland
- Bundelkhand Upland
- Malwa Plateau
- Baghelkhand
- Chotanagpur Plateau
- Meghalaya Plateau
- Deccan Plateau

5.2 Hill Ranges of the Peninsular Plateau

- Aravalli Range
- Vindhyan Range
- Satpura Range
- Western Ghats (or The Sahyadris)
- Eastern Ghats
- The significance of the Peninsular Plateau

6. Coastline of India

6.1 East Coast of India

6.2 West Coast of India

6.3 Coastlines of Emergence and Submergence

6.4 Western Coastal Plains of India

- Kutch and Kathiawar region
- Gujarat Plain
- Konkan Plain
- Karnataka Coastal Plain
- Kerala Plain

6.5 Eastern Coastal Plains of India

- Utkal Plain
- Andhra Plain
- Tamil Nadu Plain

6.6 The significance of the Coastal Plains

7. Indian Islands

7.1 Andaman and Nicobar Islands

7.2 Lakshadweep Islands

7.3 New Moore Island

8. Drainage Systems of India

8.2 Drainage Systems Based on Orientation to the sea

8.3 Major River System or Drainage Systems in India

8.4 Indus River System

- Indus River
- Jhelum River
- Chenab River
- Ravi River
- Beas River
- Sutlej River

8.5 Ganga River System

- Ganga River
- Right Bank Tributaries of The Ganga
- Left Bank Tributaries of The Ganga River

8.6 Brahmaputra River System

8.7 Peninsular River System or Peninsular Drainage

- Evolution of the Peninsular Drainage
- Comparison: Himalayan River System & Peninsular River System
- East Flowing Peninsular Rivers
- West Flowing Rivers of Peninsular India
- Ghaggar River – Inland Drainage

1. Indian Monsoons

1.2 Mechanism of Indian Monsoons – Based on Modern Theories

- March to May
- Indian Monsoons – Role of ITCZ (Inter-Tropical Convergence Zone)
- Indian Monsoon Mechanism – Jet Stream Theory
- Indian Monsoon Mechanism – Role of Sub-Tropical Jet Stream (STJ)
- Indian Monsoons – Role of Tropical Easterly Jet (TEJ) (African Easterly Jet)
- Indian Monsoons – Role of Tibet
- Indian Monsoons – Role of Somali Jet
- Indian Monsoons – Role of Indian Ocean Dipole

2. Indian Climate

2.1 Features of Indian Climate

- Rainfall
- Temperature

2.2 Factors Influencing Indian Climate

- Latitudinal location
- Distance from the Sea
- Himalayas
- Physiography
- Monsoon Winds
- Upper Air Circulation
- Tropical Cyclones and Western Disturbances
- El-Nino, La Nina and ENSO

2.3 Indian Climate – Seasons

- Winter Season in India
- Summer Season in India
- Rainy Season – South West Monsoon Season
- North East Monsoon Season – Retreating Monsoon Season
- Annual Rainfall (South West Monsoons + Retreating Monsoons)

2.4 Climatic Regions of India

- Stamp's Classification of Climatic Regions of India
- Koppen's Classification of Climatic Regions of India

3. Natural Vegetation of India

3.1 Classification of Natural Vegetation of India

- A. Moist Tropical Forests
- B. Dry Tropical Forests
- C. Montane Sub-Tropical Forests
- D. Montane Temperate Forests
- E. Alpine Forests

4. Biogeography – Soils

4.1 Soil Types: Sandy, Clayey & Loamy

4.2 Soil Profile (Soil Horizon)

4.3 Factors that influence soil formation in Indian Conditions

- Parent Material
- Relief
- Climate
- Natural Vegetation

4.4 Major Soil Groups of India

- Alluvial Soils
- Black Soils
- Red Soils
- Laterite – Lateritic Soils
- Forest – Mountain Soils
- Arid – Desert Soils
- Saline – Alkaline Soils
- Peaty – Marshy Soils

Economic Geography for General Studies UPSC Civil Services Exam

Coming Soon...