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2019 : Discuss the rainfall pattern and corelate it with spatial distribution of natural vegetation in India

and

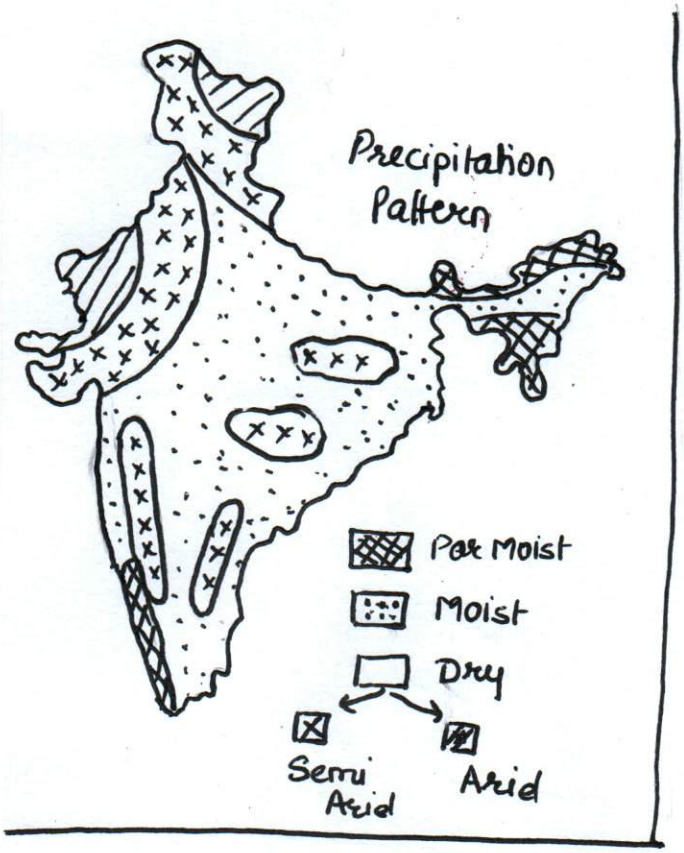
2015 : Explain the pattern of winter rainfall in India

Frame Rainfall season in India is essentially Advancing monsoon followed on by Retreating monsoon.
The other two seasons Dry summers and Dry winters have limited temporal and spatial rain
In the question of winter rainfall - both retreating monsoons and Dry winter (Wn disturbances) rainfall is to be explained.

Answer The spatial distribution of rainfall in India is highly uneven. Wettest Cherrapunji (1080cm) and one of the driest Jaiselmer (9cm) justifies the uneven pattern.

The pattern of rainfall can be applied to classify 3 principal precipitation regions viz.

- Dry - less than 100cm
- Humid - 100 - 200cm
- Per Humid - > 200cm



The characteristics of vegetation is influenced by climate, relief and soil. Among with climate forms the major determiner As India is Tropical climate par excellent, high temperature forms common factor developing Tropical vegetation and dominant However, it is pattern of rainfall that distinguishes vegetation as

- Tropical Evergreen
- Tropical Deciduous
- Tropical Thorny

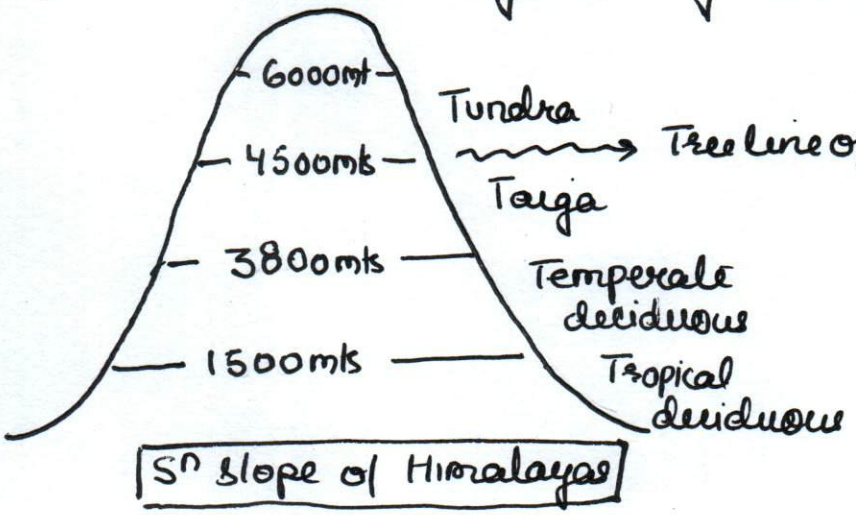
Tropical Evergreen – Characterised by density and variety is confined in Par Moist locations as Wet Evergreen having annual amount of precipitation >250 cm as Malabar Coast & SN NE Region. In Brahmaputra basin and Konkan Coast precipitation of upto 200 cm have developed Semi evergreen with less varieties of plants. Additionally Coromandel Coast with winter rains have dry evergreen variety of vegn Jamun, Mesa, Cedar, Gurjan, Gorumara, Hopee, Indian Chestnut, Mudumalai forms important plant varieties.

* Inter tidal zones with unique littoral habitat have mangroves as additional sub variety of tropical evergreen with Sundarbans, Gulf of Kutch & Khambat as examples

Tropical deciduous - forms dominating vegetation type of country corresponding to monsoonal climate. Extensive from foot of Shiwaliks to the plateau interiors. It is hard wood deciduous forest with sparser canopy; extending in regions of seasonal precipitation of 150-200 cm. Sal, Sandalwood, Kusum, Palas, Khair, Bijasal forms prominent plant varieties.

Tropical thorny - drier extensions with semi arid to arid conditions have this vegetation. Categorised as generalised thorny - it is drier extension of tropical deciduous vegetation - as in Rainshadow of Sahyadri, Telengana, Dandkaranya and Chottanagpur plateau 50-100 cm of rainfall region.
In Arid areas - xerophytes of Desert Marusthali and Halophytes of salt marshes of Rann are included
Babul, Sabai grass, Kabuli kikar are plant varities

* Relief regulated rainfall in Sn hills and Himalayas have Montane altitudinal varieties of vegetation. This includes Alpine meadows, Taiga, Evergreen forest and semi arid ~~Vegetation~~ vegetation



Idealised Vegetation Pattern of NW Himalayas

2022 : Soils of India, are clear reflection of structure and process. Comment

and

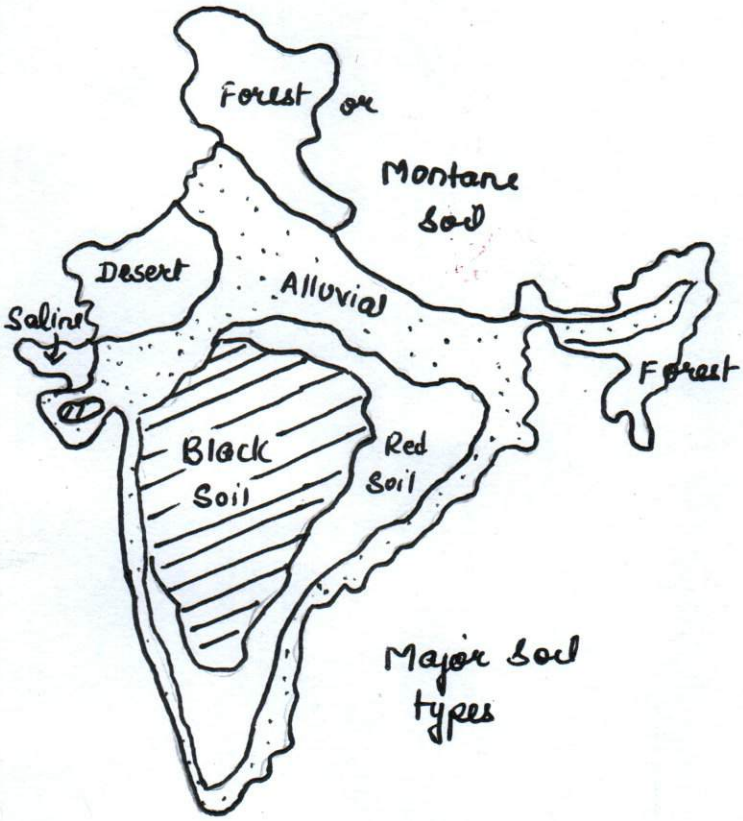
2020 : Soil types in India, classified on the basis of color, process, possess specific mineral and chemical characteristics. Discuss.

Frame In both these PYQs on Indian soil defining soil, identifying its types and characteristics are required

It is because — structure & process (2022) do determine color, mineral and chemical comp'n (2020)

Answer

- Top most layer of lithosphere, i.e., dynamic and complex mixture of minerals and humus is called soil.
- The major factors affecting formation of soil are relief, structure, climate, vegetation, other life forms and time
- ICAR - thus takes into consideration genesis colour, composition and location to classify 8 different soil types in India —



Soil forming regimes - when applied to insitu soil - peninsular soil of India - have generated two principal structural soils - Black soil
- Red soil

Black Soil - structurally developed over basaltic tableland (lava plateau) is soil of clayey texture. These are rich in lime, iron but are poor in potash, nitrogen and humus. Essentially categorised as dark and medium black these covers Maharashtra Malnad and Kathiawar plateau regions.

Red Soil - structurally developed over Archean base thus have high concentration of iron oxides. More sandy in texture, poor in phosphorous, nitrogen and lime makes it infertile. Standing vegetation creates Red-brown and Red Yellow variants

* Laterite soil are process induced red soil variants subjected to percolational translocation, thus is acidic infertile soil. These are patchy in their presence in peninsular plateau.

It is with physiographic unit called Plains of India that process dominant - gradational soil - alluvial soil is found. Being mixture of variable grade of sand and clay - these are categorised as - flood plain and delta soils.

Annually renewed - Khader is distinguished from old alluvium - Bhager - is being more fertile

These soils are with moderate to low content of nitrogen, phosphorous and potash, moreover, as it spreads in variable rainfall regions - it involves multiple soil forming regimes thus variants

- leached acidic alluvial - Brahmaputra basin
- Saline alluvial (Kari) - deltaic plains
- alkaline alluvial (Reh/ Kallar) - bagar soil

* Montane / Forest soil essentially bears the imprint of climate, vegetation and relief. Alpine meadow Podzol, Podzolic with decreasing altitude justifies it. Relief forms the regulator of soil depth - scree / skeletal soil - with restricted fertility

2023 : Describe the origin, distribution and economic significance of Gondwana system of rock in India

and

2021 : Discuss the reserves, distribution and production of all varieties of coal in India

Frame In both the questions coal destribution and production is common
However 2023 question, apart from being specific with Gondwana Coal is demanding mention of geological formation.

Answer The continent of Gondwana or Gondwanaland was named by Austrian scholar Eduard Suess after Gondwana region of north central India.
The name was first used in geological context by H. B. Medlicott in 1872 from which Gondwana sedimentary sequences (Permian - Triassic) are also described
The Gondwana basins in India occurs along

Major river valleys - both as discrete bodies or unified Post Permian stratas. These are named after rivers (Damodar, Son, Narmada, Godavari) or linear hill ranges (Satpura, Rajmahal)

The sediments constitutes upto 5km thick strata deposited over 200 million years (from upper Carboniferous - lower cretaceous) - called Gondwana super group - this is divided into

- Permo Carboniferous - Lower Gondwana
- Mesozoic upper gondwana.

Distribution - Entire Gondwana super group involves succession of mainly fluviatile and lacustarine deposits The base do involves glacial deposit (paleoclimatic apparent S. pole wandering) and marine beds.

A major part of Gondwana sediments are confined to three tracts —

- Koel - Damodar
- Son - Mahanadi
- Pranhita - Godavari

→ Chronologically two fold classification of these rocks includes - Talchir series & Raniganj - Lower
- Rajmahal, Panchet, Umia - Upper

Economic Significance of Gondwana rocks

- Coal : accounting for nearly 99% of Coal reserves of country, with Barakar and Raniganj formations of Damuda group constituting most important coal bearing rocks - bituminous variety
- Iron ore : about 760m thick Iron stones shale forms Sideritic iron ore about 40-50% iron content
- Clay : various types - used for making refractory bricks, pottery and chinaware

⇒ For all types of coal → need to add [both] -

a) Bituminous - Gondwana — Jharia, Bokaro (Damodar)
- Talcher, Sambalpur (Mahanadi)
- Korba (Hasdo)
- Singrauli (Son)
- Kamptee (Wardha)

b) Lignite - tertiary coal - Rajasthan - Palana, Jaiselmer
Gujarat - Umarsar
Tamil Nadu - Neyveli

c) * Anthracite - Hasmanta - Kalakot - J and K.

addition form with lignite reserves of Udhampur, Kareewas etc