

GEOGRAPHY (853)

Aims

1. To enable candidates to acquire knowledge (information) and to develop an understanding of facts, terms, symbols concepts, principles, generalizations, hypotheses, problems, trends, processes and methods of Geography at the national and global level.
2. To apply the knowledge of the principles of Physical Geography in explaining the causes and consequences of natural hazards and suggest ways of coping with them through sustainable development.
3. To develop skills of drawing maps, surveying, and drawing statistical diagrams and thematic maps.
4. To develop an interest in Geography.

CLASS XI

There will be **two** papers in the subject:

Paper I – Theory (3 hours)70 marks

Paper II – Practical and Project Work ...30 marks

PAPER I: THEORY (70 Marks)

There will be one Theory paper of **three** hours duration divided into **two** parts:

Part I (30 marks) will be **compulsory** and will consist of Section A and Section B.

Section A will include **compulsory** short answer questions testing knowledge, application and skills related to elementary/fundamental aspects of the entire syllabus.

Section B will consist of one question on **map work**.

Part II (40 marks) will consist of **seven** questions. Candidates will be required to answer **four** out of **seven** questions. Each question in this part shall carry **10 marks**.

GEOGRAPHY AS A DISCIPLINE

1. Geography - its interdisciplinary approach and future prospects

Geography as an integrating discipline. Physical Geography and Natural Sciences; Geography and Social Sciences.

Branches of Geography:

- (i) *Systematic approach: Physical Geography (Geomorphology, Climatology, Hydrology); Human Geography (Historical, Social, Population and Settlement, Economic, Political).*

– *The conceptual and intellectual ideas of a number of new approaches to contemporary human geography should be examined to understand the strengths and limitations of each approach within the context of Human Geography and Social Sciences.*

- (ii) *Regional approach: Regional/ Area Studies, Regional Planning, Regional Development.*

Future prospects of Geography to be discussed:

- *In the area of GPS, GIS, Remote Sensing for resource identification.*
- *Applied geography in town and country planning, environment management and law, cartography and mapping, geography education, map analysis, travel and tourism (to be taught only for the sake of awareness, not for testing).*

PRINCIPLES OF PHYSICAL GEOGRAPHY

2. Formation of the Earth

Theories of formation; Methods of measuring age of the earth; Structure and Composition; Rocks.

- (i) *Theories of formation of the earth: the Big Bang theory..*
- (ii) *Methods of measuring age of the earth: Tidal force, Sedimentation, Rate of Erosion, Salinity of the Ocean, Radioactivity – a brief understanding.*

(iii) *Structure and composition of the earth's interior: crust, mantle, core; their properties - temperature, pressure, thickness. Sources of information – direct and indirect; seismic waves, their behaviour and inferences.*

(iv) *Rocks: Definition of rocks and minerals. The mineral groups responsible for different rocks formed on the earth: silicates, carbonates, sulphides, metals.*

Classification of rocks by origin: igneous, metamorphic and sedimentary rocks – their distribution in India; characteristics, types, economic importance.

The rock cycle.

3. Changing Face of the Earth

Landforms and Processes of Gradation

(i) *Endogenous processes: theory of plate tectonics and the process of drifting continents, theory of Isostasy by Pratt and A. Holmes.*

Definition of endogenetic force, difference between slow and sudden forces, vertical and horizontal forces and their effects. Folding and Faulting – types, Sea floor spreading, continental drifting and isostasy.

(ii) *Landforms – mountains, plateaus and plains and their types.*

Meaning and differentiation between the three main landforms of the earth.

Classification of mountains on the basis of their origin or mode of formation: fold, block, volcanic and residual with examples from the world.

Classification of plateaus on the basis of their situation: intermontane, piedmont and continental with examples from the world.

Classification of Plains on the basis of formation: structural, erosional and depositional with examples from the world.

(iii) *Vulcanicity – materials and processes. Major volcanic forms.*

Explanation of how volcanoes are formed; identification of the type of volcano; recognition of the properties of volcanic materials; explanation of why volcanoes are more in the areas of converging plates.

(iv) *Earthquakes.*

Origin of earthquakes, waves and their behaviour, hypocentre (focus), epicentre; their causes and distribution; effects; isoseismal and homoseismal lines, sea quakes, tsunamis; measuring earthquakes and their intensity.

Studying the effects of earthquakes on a country like Japan.

(v) *Exogenetic process and associated landforms.*

Weathering and gradation – difference between the two. Role of weathering in gradation. Different types of weathering.

(vi) *Soil.*

*The factors affecting soil formation; soil profile; physical and chemical properties, distribution and characteristics of soils in the world - zonal, azonal and intrazonal– only broad characteristics related to Indian soils to be done (detailed distribution **not required**).*

Alluvial, red, yellow, black and laterite soils in India and the problems related to their management.

(vii) *Fluvial processes and associated landforms.*

Work of rivers - concept of baselevel; processes of erosion, transportation and deposition. Types of erosion - headward, vertical, lateral; transportation mode and deposition.

Landforms made by the river - V shaped valley, gorges, rapids, waterfalls, alluvial fans, levees, floodplains, meanders - river cliff, slip-off slope; braided channels, oxbow lakes, deltas – delta plains.

*Development of river valleys, drainage patterns. **Diagrams and examples from India with photographs.***

(viii) *Aeolian processes and associated landforms.*

*Process of wind erosion – abrasion, attrition, deflation. Ideal conditions for erosion in hot deserts; landforms resulting from erosion - deflation hollows, pedestal rocks, yardangs, desert pavement; landforms resulting from deposition - sand dunes and their types, loess. **Diagrams and examples from India and Asia.***

(ix) Glacial processes and associated landforms.

Continental and mountain or valley glaciers, processes of glacial erosion – plucking, abrasion, attrition; erosional features, e.g. cirque and its components, U shaped and hanging valleys, roche moutonnes, crag and tail, depositional formations, moraines of various types. Some Indian glaciers - Siachen, Gangotri, Baltoro. Diagrams and examples from India.

(x) Work of ground water and associated landforms. Water Conservation.

Definition of ground water, water table, aquifers, springs. Process of erosion by groundwater solution, corrosion. Features formed by underground water (karst topography) – sink holes, dolines, caves, caverns, karst lakes, depositional features – stalactites, stalagmites, cave pillars, dripstones: their formation. Diagrams and examples from India and Australia.

Emerging water problems and conservation of water resources.

(xi) Marine processes and associated landforms.

Erosional process of sea waves – abrasion, attrition, solution and hydraulic action; coastline and shoreline, erosional features; sea cliffs, sea caves, sea arch, headland inlet, stacks and depositional landforms, e.g. - bays, bars and lagoons; Coral reefs: types – fringing, barrier and atolls; submerged and emergent coastlines. Diagrams and examples from India, Australia and West Europe (wherever relevant).

Note: For topics (viii) to (xii) only diagram or photograph based questions will be asked. Photograph based information should be made use of to emphasize the different processes of gradation.

4. Atmosphere

(i) Composition and structure of atmosphere.

Layers of the atmosphere: troposphere, stratosphere, ozonosphere, mesosphere, ionosphere; their height; composition; special characteristics of each layer; ozone depletion.

(ii) Atmospheric temperature.

Heating and cooling of the atmosphere, radiation, conduction, convection. Insolation and factors influencing it – angle of sun's rays, duration of day, transparency of atmosphere. Heat budget i.e. balance between insolation and terrestrial radiation-areas of surplus and deficit heat in different latitudes resulting in latitudinal heat balance.

*Factors controlling its horizontal and vertical distribution, temperature anomalies and their nature. Isotherms: their characteristics; isotherm maps of the world in July and January. Reasons for the variations in temperature. **Practical work on temperature measurement and graphs to show variations in temperature of one or more cities of India.***

(iii) Atmospheric Pressure.

Its horizontal and vertical distribution, factors affecting the distribution, characteristics of isobars on world maps for July and January. Patterns and the causes for the distribution of isobars.

Pressure belts and winds – types of winds, air masses and atmospheric disturbances, cyclones of temperate and tropical areas; anticyclones – their types and associated weather. World map showing major paths of cyclones. Jet Streams – concepts to be introduced with reference to India.

Practical work on pressure measurement.

(iv) Atmospheric Moisture.

Processes of evaporation, condensation and precipitation; relative and absolute humidity; forms of condensation - cloud, fog, dew, frost; precipitation – its forms: snow, hail, rain; types of rainfall: orographic, cyclonic, convectional. Monsoons – origin and factors that affect. Examples from different parts of the world.

Practical work on measuring rainfall and use of bar graphs to show variations in rainfall in one or more cities of India.

5. The Realms of Water

- (i) Submarine relief and deposits of the Atlantic, Pacific and Indian Oceans.

The depth and the features. The sea floor deposits and their characteristics, the importance of marine resources. Ocean pollution and ways to overcome them.

- (ii) Ocean water - salinity, temperature, density.

Composition of seawater and factors that control distribution of salinity, density and temperature.

- (iii) Ocean water movements.

Direct and indirect tides – origin, time, spring and neap tides. Waves – parts, characteristics, formation. Currents - factors affecting currents, currents of Indian, Pacific and Atlantic oceans. Role of currents in modifying climates of coastal areas. Introduction to El Nino and El Nina as conditions that affect the intensity of the monsoons over India.

6. Biosphere – Life on the Earth

- (i) Nature of Biosphere, concept of ecosystems, components of ecosystem.

Meaning, nature of interaction between the different components of the biosphere. Understanding the concept of biodiversity. To appreciate various reasons for valuing and conserving biodiversity (ethical, moral, economic, aesthetic).

- (ii) Biodiversity for sustenance of mankind.

The various roles played by biodiversity in sustaining mankind - as a source of food, medicine, pollution control, etc.

- (iii) India as a mega diversity nation.

A basic understanding that India with its varied climate and landscape is home to a variety of unique ecosystems and endemic species e.g. the largest mangrove forest in the world - the Sundarbans, vast mountain forests in the Himalayas, tropical evergreen forests in the Western Ghats and the North-

East region, desert vegetation in Rajasthan, thorn and scrub forests in the plateaus, etc.

- (iv) Loss of biodiversity - threatened, endangered and extinct species.

Understanding the implications of loss of biodiversity.

Categorizing species in different groups like - threatened, endangered and extinct. Examples of plants and animals.

- (v) Strategies for conservation of biodiversity – in-situ and ex-situ.

Looking at various in-situ and ex-situ strategies for their efficacy and viability:

In-situ strategies - protected areas (biosphere reserves, national parks, wildlife sanctuaries).

Ex-situ strategies - captive breeding, zoo, botanical garden, gene banks and their use.

7. A. World Climatic types

Low latitude / tropical climates

- (i) Equatorial (ii) Monsoon and trade wind littoral (iii) Dry tropical (desert).

Mid latitude/temperate climates -

- (i) Mediterranean (ii) Marine west coast (iii) Dry sub-tropical (iv) Dry mid latitude (cold deserts).

High latitude/polar climates -

- (i) Boreal (ii) Tundra

For each of the above climatic types, the following is to be studied:

- *Location, climatic conditions and areas;*
- *Description of major human activities (both farming and forestry.)*

B. Climate Change – causes/factors of climatic changes in the recent past.

Natural and man-made factors, with special reference to climatic changes in India. Measures taken to adapt to these changes in urban and rural India.

MAN- ENVIRONMENT INTERACTION

8. Natural hazards, their causes and management

- (i) Hazards of volcanic eruptions and earthquakes.

Major volcanic areas and their problems; major earthquake prone areas - effects on land and human life. Seismic zones of India and measures to reduce the fury of earthquakes.

- (ii) Identification of major drought prone areas.

Characteristics of drought prone areas. Causes, problems and remedial measures (like rain water harvesting) adopted with special reference to India.

- (iii) Areas prone to floods / landslides - India.

Landslides - causes, effects and measures adopted to check (Himalayan region). The causes of flooding and checking floods (like construction of dams and afforestation) – with special reference to India.

9. Map Work

A question on map work will be set to identify, label and locate any of the following items studied in topics from **Principles of Physical Geography** and cities from Climatic Regions only.

MAP LIST

Mountains: Himalayas, Hindukush, Elburz, Zagros, Kirthar, Caucasus, Alps, Pyrenees, Carpathians, Urals, Khingan, Kunlun, Altai, Drakensburg, Kjolen, Andes, Rockies, Appalachian, Great Australian Alps, Verkhojansk, Great Dividing Range, Southern Alps.

Plateaus: Tibetan, West Australian, Iranian, Anatolian, Pamirs, Ethiopian, Bolivian, Deccan, Guiana, Colorado, Brazilian, Labrador, Arabian.

Water Bodies (bays, gulfs, straits, sea, oceans): Arctic Ocean, Atlantic Ocean, Indian Ocean, Pacific Ocean, Southern Ocean, Beaufort Sea, Hudson bay, Gulf of California, Gulf of Mexico, Panama Canal, Bering Sea, Sea of Okhotsk, Sea of Japan, East China Sea, South China Sea, Yellow Sea, Timor Sea, Tasman Sea, Persian Gulf, Red Sea, Black Sea, Mediterranean Sea, Caspian Sea, Arabian sea, North Sea, Baltic Sea, Suez Canal, Strait of Magellan, Bay of Biscay, Bay of Bengal, Andaman Sea, Lakshwadweep Sea.

Rivers: Mississippi, Missouri, Mackenzie, Amazon, Orinoco, St. Francisco, Parana, Orange, Nile, Zaire, Niger, Zambezi, Rhine, Rhone, Seine, Danube, Volga, Euphrates, Tigris, Thames, Ob, Yenisei, Lena, Amur, Hwang Ho, Yangtze Kiang, Sikiang, Mekong, Irrawaddy, Salween, Indus, Ganga, Godavari, Murray, Darling.

Ocean Currents: North Pacific current, Alaska current, North Atlantic Drift, Gulf Stream, Labrador current, North Equatorial current, South Equatorial current, Equatorial Counter current, Peru current, South Pacific current, South Atlantic, Current, West wind drift, South Indian current, Benguela Current, Brazilian current, Southwest Monsoon current, Indian counter current, Mozambique current, West Australian current, KuroShio current, Oyashio current, East Australian current, Guinea current, Falkland current.

Islands: Greenland, Hawaii, Aleutian, West Indies, Tierra del Fuego, Galapagos, Baffin, Newfoundland, Iceland, British Isles, Canaries, Corsica, Sardinia, Sicily, Madagascar, Sri Lanka, Philippines, Papua New Guinea, Indonesia, Japan, Australia, New Zealand, Tasmania.

Climatic Regions: Equatorial, Monsoon, trade wind littoral, Dry tropical (desert), Mediterranean, Marine west coast, Dry sub-tropical, Dry midlatitude (cold deserts), Boreal, Tundra.

PAPER II: PRACTICAL WORK AND PROJECT WORK (30 Marks)

Candidates will be required to undertake the following Practical work and Project work:

1. Practical Work

Any **three** of the following four topics to be undertaken.

- (a) Surveying - elementary principles; preparing plans of the school compound or a small area with the help of chain and tape.
- (b) Statistical diagrams - line graphs (simple and multiple), composite bars, pie diagram, flow and star diagram, (the data used will be that used in Paper I).
- (c) Map projections – uses, construction and properties of the following:
 - (i) Cylindrical equal area.
 - (ii) Simple conical with one standard parallel.
 - (iii) Zenithal equidistant.
- (d) Aerial photographs – Introduction; definition; difference between map and an aerial photographs; uses of aerial photographs, advantages of aerial photography.

Types of Aerial Photographs:

- (i) *Based on the position of the cameral axis – vertical photographs, low oblique, high oblique (only definition and explanation).*
- (ii) *Based on Scale – (a) Large scale photographs (b) Small scale photographs. Scale of Aerial Photograph – (a) by establishing of relationship between photo distance and ground distance; (b) by establishing relationship between photo distance and map distance.*

2. Project Work (Assignment)

Fieldwork to understand any physical phenomena in the local or selected area to illustrate the physical processes (**One** topic as an assignment. Sketches and drawings will be given credit).

- (i) Take any physical feature in your immediate locality:
 - (a) draw sketches or take photographs to highlight physical features.
 - (b) survey how these features have been used and prepare a report.
 - (c) suggest ways by which the area of study could be better used keeping in view the needs of the people of the region.
- (ii) Choose any island area of the world or India and:
 - (a) trace the map of the area and show physical features, towns and port cities.
 - (b) prepare a project report using photographs and pictures from brochures and magazines to show:
 - its origin and formation.
 - soil types, vegetation.
 - human occupations.
- (iii) Any natural hazard like drought, flood, erosion, landslides, etc. in a local area.

Choose a natural hazard in the local area. Describe the nature of damage by consulting newspaper reports, studies, interviews with local people. Identify the nature of damage before and after – land, building, public property, soil, vegetation, animals, etc. What are the chances of it occurring again and what precautions are being taken?

CLASS XII

There will be **two** papers in the subject:

Paper I – Theory (3 hours) ...70 marks

Paper II – Practical and Project Work ...30 marks

PAPER I: THEORY (70 Marks)

There will be one Theory paper of **three** hours duration divided into **two** parts:

Part I (30 marks) will be **compulsory** and will consist of Section A and Section B.

Section A will include **compulsory** short answer questions testing knowledge, application and skills related to elementary/fundamental aspects of the entire syllabus.

Section B will consist of one question on **map work**.

Part II (40 marks) will consist of **seven** questions. Candidates will be required to answer **four** out of seven questions. Each question in this part shall carry **10 marks**.

INDIA IN THE WORLD'S CONTEXT

1. Physical Environment

- (i) **Locational setting - India:** size and area. Present importance of the location of India with reference to the Indian Ocean Rim countries and the Northern and Western frontiers. Comparison with China and Australia.

Extent, position with reference to latitude and longitude, length of coastline and frontiers with neighbouring countries. The locational advantages of India in the Indian Ocean and as a subcontinent.

- (ii) **Structure of India** – Geological formation, relief and drainage; major physiographic divisions and their characteristics.

(a) *Outline of the geological evolution and structure: basic definitions – geology, era, periods, physiography, geological structure, stratigraphy.*

Names of the main Standard and Indian geological eras with reference to Indian Geology.

*Geological evolution of: the Peninsular Plateau, the Himalayas and the Great Plains. Difference between the Peninsular Plateau and the Himalayas. (The Geological rock formations of India are **not required**).*

- (b) *The three-fold physiographic divisions: the Himalayan mountain complex, the Indus-Ganga-Brahmaputra Plains and the Peninsular Plateau.*

- **Himalayan mountain complex: (orthoclinal structure)**

The three parallel ranges, the northwest and northeast offshoots, comparison between Western and Eastern Himalayas.

Regional divisions of the Himalayas (Kashmir/ Punjab Himalayas, Himachal/ Uttranchal/ Kumaon Himalayas, Nepal Himalayas, Assam Himalayas).

- **Indus-Ganga-Brahmaputra Plains**

The relief features – bhabar, tarai, bhangar, khaddar, bhur, barind, barkhans, doabs. Regional divisions of the plains: Rajasthan plain (the Great Indian desert), Punjab plain, Ganga plain, Brahamaputra/ Assam plain.).

- **The Peninsular Plateau**

The Malwa plateau, Chotanagpur Plateau and Deccan Plateau: the relief features - badland, Western Ghats, Eastern Ghats, Aravalis. Comparison between the Western Ghats and the Eastern Ghats.

The above three physical divisions are to be studied with reference to their extent, altitude, slope and landform characteristics.

- **Coastal Plains**

Comparison between Western and Eastern Coastal Plains and their divisions. The relief features: Lagoons, estuaries, deltas.

- **Islands**

Difference between Andaman and Nicobar and Lakshwadweep islands.

- (c) **Drainage (i.e. rivers) and drainage systems:** Names and sources of the main rivers and their major tributaries (Extent of river basin area **not required**).

Comparison of Himalayan and Peninsular rivers.

(iii) **Climate: India** - Factors affecting India's climate: Temperature - factors affecting temperature. Atmospheric pressure conditions during the year; origin and mechanism of the monsoon, Jet streams, Southern Oscillations; wind and rainfall distribution during the year; characteristics of the four main seasons - hot and dry, hot and wet, cool and dry, cool and wet with reference to temperature distribution in north and south India, pressure, wind conditions - distribution of resultant rainfall; variability of rainfall, incidence of droughts and floods. Temperature and rainfall graphs of Mumbai, Delhi, Kolkata, Chennai, Jaisalmer, Leh, and Hyderabad.

Role of various factors affecting Indian climate - latitudinal extent, distance from the sea, northern mountain ranges, physiography, monsoon winds, upper air circulation, western disturbances and tropical cyclones, southern oscillation, El Nino; understanding of the concept and mechanism of monsoon; Indian Monsoonal Regime - onset, rain bearing system, break in the monsoon, retreat of the monsoon;

Seasons of India - with reference to temperature, pressure distribution, wind systems and local winds (loo, kalbaisaki/Norwesters, Mango showers; explanation of the variability of rainfall in different areas over different seasons.

Droughts and Floods - meaning, causes, affected areas and mitigation programmes. Temperature and rainfall graphs of Mumbai, Delhi, Kolkata, Chennai, Leh, Jaisalmer and Hyderabad.

(iv) **Natural vegetation:** Major vegetation types of India, their geographical distribution with reference to rainfall and temperature conditions - description of the important tree types and their adaptation to the climate. Forest - area covered, importance, use, misuse and potential both for exploitation and conservation. Present forest policy.

Distinction between vegetation and forest, virgin vegetation; factors affecting vegetation.

Classification of vegetation types - tropical evergreen, monsoon forests, tropical dry forests, arid forests, deltaic forests, mountain forests and their geographical distribution and adaptation.

Importance of forest to man; Impact of human activity on vegetation. Forest area and forest cover in India. Forest Conservation - need, Social Forestry (Agro forestry, community forestry, commercial farm forestry, non-commercial farm forestry, urban forestry); Forest Conservation Movement: Van Mahotsav, Chipko Movement.

National Forest Policy (1988): objectives of the Forest Policy; Integrated Forest Protection Scheme.

2. Population and Human settlements

(i) Population of India compared to six countries - China, Australia, USA, Canada, Russia and Brazil.

Population of India as compared to the other six countries with reference to percentage of world population and India's position in the world.

(ii) National and State level patterns of population distribution.

Definition of census. Index of concentration (highest and lowest index of concentration as per the latest census), density of population - arithmetic and physiological.

Spatial distribution of population in India and explanation of the factors influencing it - landforms, climate, accessibility and level of development that result in this pattern. Comparison of the density at the State level and factors influencing it.

(iii) Pattern of population growth in the last three decades; implications for development.

Meaning of terminologies such as population, birth rate, death rate, population growth rate, natural growth rate and absolute growth of population, migratory growth, positive and negative growth.

Population growth of India at national level - trends of 1921, 1951 and 1981 to the latest Census, absolute growth rate of population. Demographic characteristics of India at the

National level- birth rate, death rate, and natural growth rate from 1991 to the latest Census.

Drawing general conclusions about the:

Impact of rapid growth rate on economic development, on environment; need for planned development (to maintain the ecological balance).

(iv) Migration trends over the last 25 years.

Explanation of the important terms – migration, commutation, out migration, in migration, step-wise migration and migrant, push and pull factors.

Types (National and International migration, inter migration and intra migration, urban migration and rural migration) and trends of migration.

Streams of migration: (rural-rural, rural-urban, urban-urban and urban-rural).

Causes for migration - natural, economic, political and social.

Comparing the consequences of each type of migration on cities and rural areas.

(v) Demographic attributes at National level - trends and patterns of: 1. Rural urban population 2. Age and sex composition 3. Literacy levels 4. Working and non-working population; implications for development.

Study of the causes and trends of rural urban composition, age and sex ratio, literacy level, working and non-working population at the National level (highest and lowest figures for each of the above) in the latest census. Implications for development.

(vi) Rural settlements – size and number of villages as per the latest census. Types and patterns in hill areas, plains and coastal locations.

Distinction between Rural and Urban settlements; Rural and Urban Population. Classification of villages as per the latest census.

Factors affecting the types (distinction between compact and dispersed) and

patterns (linear, circular, star shaped, rectangular, shapeless) of rural settlements in plains, coastal areas, mountains and plateau areas.

(vii) Urban settlements – size classification of towns as per the latest census. Study of population growth in Delhi, Mumbai, Kolkata and Chennai from 1951 till the latest census.

Definition of an Urban area according to the latest census; Urban agglomeration, conurbation, urban sprawl, ribbon settlement, infill, metropolis, megalopolis.

*Trends of urbanization **only** in Delhi, Mumbai, Kolkata and Chennai from 1951 till the latest census.*

Factors that influence the growth of urban centres in India. Problems and advantages of urban growth.

3. Resources of India and their Utilisation

(i) Need for environmental management vis-à-vis development.

Understanding that from the development point of view, environment may mistakenly be seen as a 'resource' to be exploited, whereas, environment needs to be viewed as a 'capital' that needs to be managed carefully.

(ii) Land resources: Land use pattern in India – quality of cultivable land, size of land holdings.

Defining the term land resource; its importance and problems. Land use pattern – net sown area, area sown more than once, forests, land not available for cultivation, permanent pastures and other grazing lands, land under miscellaneous tree crops, culturable (cultivable) waste, fallow land, quality and size of cultivable land holdings. Methods to reduce fragmentation of land holdings.

(iii) Water resources and types of irrigation.

Water Resources: Their demand and utilization. Types of water resources: surface and ground water.

Meaning, importance and need for irrigation in India.

Sources of irrigation:

Traditional Methods: wells, tanks, tube wells - Advantages and disadvantages; Study of two states where each of the above types of irrigation is mainly prevalent.

Modern methods: tube wells, multi-purpose projects, sprinkler irrigation, Perennial canals - Advantages and disadvantages. Names of two canals each in Uttar Pradesh, Punjab, Haryana, Andhra Pradesh, Tamil Nadu and Maharashtra.

Use and misuse of water for irrigation; study of alternative methods of irrigation. Overwatering - reasons and regions affected by it; dangers of overwatering;

Conservation of water resources including their management; rain water harvesting.

(iv) Agriculture: Types, development and problems.

(a) Wet and dry farming, crop rotation and crop combination, intensity of cropping, problems of Indian agriculture; use of technology in agriculture. Modern inputs, change over from subsistence to commercial agriculture, need for Green Revolution. Diversifying Indian agriculture – importance of animal husbandry.

Wet and dry agriculture: Crop rotation and crop combination. Intensity of cropping – concept and crops associated; problems of Indian agriculture; Use of new technology – Green revolution: Need, impact and problems, second green revolution - strategies for second green revolution. Diversification of Indian agriculture – Animal Husbandry: meaning and its importance in Indian Agriculture.

(b) Study of crops:

(i) Conditions of growth (soil, temperature, rainfall requirements, crop seasons, secondary crops cultivated with them). (ii) World production and India's position. (iii) Major producing States in India and their rank as producers of the following crops:

Food grains - Rice (Japan), Wheat (China), Coarse grains – Sorghum (Jowar, Maize), Pennisetum (Bajra or Camboo), Eleusine (Ragi), Pulses.

Commercial and Industrial crops – Coffee (Nilgiris and N.E. India), Tea (Sri Lanka), Cotton (Pakistan), Sugarcane (China), Jute (Bangladesh), oilseed cultivation in India particularly of Groundnut, Coconut (Sri Lanka).

Conditions of growth: For each crop, the type of soil, temperature range, rainfall range, the crop seasons are to be done.

Main areas of growth of the above crops, in the countries specified, and reasons for growth are to be studied.

Name of the leading producer (country) in the world for each of the above crops (Food grains, commercial and industrial crops) and India's position in the world.

NOTE: Comparative study between countries with regard to food grains, commercial and industrial crops is not required.

Importance of Market Gardening and Orchard Farming – reasons and trends in development in recent years.

Self-explanatory

(v) Fishing in India, Japan and Bangladesh.

Methods, types of fish caught, fishing grounds; factors affecting the importance and development, fishing ports and markets, need and methods of fish conservation.

Understanding of marine and inland fisheries; deep sea and inshore fishing; pelagic and demersal fishing should be done. Problems affecting fishing in India, Japan and Bangladesh should be also taken up.

Two ports and two types of fishes of each coastal State in India should be studied.

(vi) Sources of Energy

(a) Minerals and power resources.

Distinguishing between metallic and non-metallic minerals; ferrous and non-ferrous minerals.

Production and distribution (three leading States and three leading centres in each State) of Iron ore, mica, coal, manganese and petroleum; their uses.

Iron ore, mica, coal: their types.

The main power resources - Nuclear thermal, hydel; three main States for generation of nuclear thermal and hydel power in India.

- (b) Conventional energy sources - fossil fuels and firewood, potential (Indian context) and limitations of each source, methods of harnessing and environmental consequences of their use.

Conventional energy sources:

Firewood – for heating and cooking along with agricultural and animal waste.

Coal, Petroleum, diesel, LPG - their potential and limitations in India. Environmental concerns with regard to their use (global warming, thermal pollution in waters, fly ash, atmospheric pollution, etc.).

- (c) Non-conventional energy sources - types of non-conventional sources (bio-mass, solar, wind, ocean, hydel, geothermal, nuclear), potential (Indian context) and limitations of each source; their environmental consequences; need to promote non-conventional energy sources.

Advantages and limitations of each non-conventional energy source.

Uses of these energy sources and distribution.

Understanding the need to promote non-conventional energy sources.

(The study should include uses and the distribution of the above energy resources).

4. Infrastructural Resources (Development of Transport and Communication).

- (a) Railways, Roadways, Water transport (inland and coastal), Air transport, Pipelines - these modes of transport are to be studied with regard to –

Location and state wise distribution of air, road and rail routes; location of waterways and pipelines; natural and economic factors that govern their distribution; density and growth. Patterns in India.

The present position, areas well and poorly served by each mode.

Problems – comparative advantage of each mode of transport, national goals to be achieved in the development of modes of transport (The Golden quadrilateral - its north-south and east-west corridor).

Ports, their location and advantage; major exports and imports of different ports. Nature and direction of trade from the ports. International trading patterns and products in the last five years.

Distinguishing between harbour and port; natural and artificial harbours. Location of major ports in India and their advantage; main items of export and import from different ports and the patterns in the last five years.

- (b) Communication – importance of communication in rural development and its policy. Importance of infrastructure as key to the development of an industrial economy.

Modern means of communication - satellites and remote sensing - Geographic Information Systems (GIS), cellular phones, radio, doordarshan, internet; difference between mass communication and tele communication. Prasar Bharti. Infrastructure as key to the development of an industrial economy.

5. Industries

- (a) Study of the location and distribution of important industrial centres; a general comparison of disparities.

Self-explanatory.

- (b) Major and minor industrial regions – factors governing their growth.

Reasons for the spread of industrial areas; Understand how the distribution of heavy and consumer industries varies in the different regions; Understanding why certain industries are more in a particular region.

Major Industrial regions: Mumbai-Pune, Hooghly, Bengaluru-Tamil Nadu, Gujarat, Chota Nagpur, Vishakhapatnam-Guntur, Gurgaon-Delhi-Meerut.

Minor Industrial regions: Ambala-Amritsar, Saharanpur-Muzaffarnagar, Northern Malabar.

Factors governing the growth of the above to be studied.

- (c) Location, production and growth of the following industries:

- (i) **Agro based industries** – Sugar, cotton textile and ready-made garments.

Sugar Industry:

Maharashtra (Ahmednagar and Pune), Uttar Pradesh (Muzaffarnagar and Saharanpur), Tamil Nadu (Coimbatore and North Arcot).

Cotton Textiles:

Maharashtra (Mumbai and Pune), Gujarat (Ahmedabad and Surat), West Bengal (Kolkata and Howrah), Tamil Nadu (Madurai and Chennai).

Ready-made garments:

Delhi, Bengaluru, Mumbai, Kolkata

- (ii) **Mineral based industries** – Iron and steel, aluminium, cement, and transport equipment. Petrochemicals, including refineries and fertilizers.

The following industrial centres of each industry are to be studied.

Iron and Steel:

TISCO (Jamshedpur), Vishweshwarya Iron and Steel Plant (Bhadravati), Bhilai Iron and Steel Plant (Bhilai), Rourkela Iron and Steel Plant (Rourkela), Hindustan Steel Limited Plant (Durgapur), Bokaro Iron and Steel Plant (Bokaro), Salem Iron and Steel Plant (Salem), Vishakhapatnam Iron and Steel Plant (Vishakhapatnam), POSCO(Paradwip).

(Integrated and mini steel plants: meaning, advantages and disadvantages also to be studied.)

Aluminium:

INDAL (Hirakud), HINDALCO (Renukoot).

Cement:

Katni Cement and Industrial Company Limited (Katni), Andhra Pradesh (Krishna, Vijaywada), Rajasthan (Savai Madhavpur, Udaipur).

Transport equipment:

Chittaranjan Locomotive Works (Chittaranjan), Diesel Locomotive Works (Varanasi), TELCO (Jamshedpur), BHEL (Bhopal).

Automobile Industry:

Maruti Udyog (Gurgaon), Premier Automobiles (Mumbai).

Ship Building Industry:

Hindustan Shipyard Limited (Vishakhapatnam), Cochin Shipyard Limited (Kochi), Mazgon Dock (Mumbai) Garden Reach Workshop(Kolkata).

Aircraft Industry:

HAL-Hindustan Aeronautics limited (Nasik, Koraput, Bengaluru).

Petro Chemicals:

UDEX (Koyali), IPCL (Vadodara).

Oil refineries:

IOCL (Barauni, Haldia and Digboi), HPCL (Mumbai and Vishakhapatnam).

Fertilizers:

FCI (Sindri), HFCL (Barauni), IFFCO (Kandla).

NOTE: Factors responsible for the location, development and present status of the Agro and Mineral based industries mentioned above, as well as the distribution centres are to be studied.

Difference between key and footloose industry; industrial clusters and indices to identify industrial clusters; industrial inertia.

Maps and sketches of Industrial regions and centres (location of agro based and mineral based industries) should be the basis for explaining the pattern of industrial development.

- (d) Tourism industry – Major natural and cultural tourist areas in India. Their special features and level of development - impact on environment and local economy. Tourist flows.

Definition of tourism, growth of tourism, advantages of tourism, important places – both natural and cultural. Positive and negative impact of tourism, problems of tourism and measures for developing eco-tourism.

6. Regional Economic Development

(Case studies)

Case studies will be preceded by a brief understanding of the meaning of development, multilevel planning and planning regions. These case studies will be undertaken with reference to the advantages and disadvantages that have accrued to the people and area - aspects covered will be their geographical location, resource base, developmental history, present trends of population, occupations, agriculture and industrial activities, issues of development.

1. Area development in Chattisgarh region – mining, silk industry and farming.
2. Electronics industry in Bengaluru– reasons for its development, extent, national and international linkages and problems.
3. Growth of Haldia port, its industries and hinterland.

7. Map Work

A question on map work will be set to identify, label and locate any of the following items studied in topics 1-6:

MAP LIST:

Locational setting of India:

8°4'N-37°6'N, 68°7'E- 97°25'E (Latitudinal and longitudinal extent of India); 23.5 ° N (Central latitude) and 82.5 ° E (Central longitude); Indira Col and Cape Comorin (Northern and Southern point of mainland India).

Mountains:

3 parallel ranges of Himalayas, Trans Himalayan range – Karakoram, Pir Panjal, Ladakh, Zaskar. Aravallis, Vindhya, Satpura, Western and Eastern Ghats, Nilgiris, Cardamom hills, Garo, Khasi, Jaintia hills, Patkoi hills, Naga hills, Mizo hills.

Peaks:

Mount Everest, Godwin Austin, Kanchenjunga, Gurushikhar, Dodabetta, Anaimudi, Mahendragiri,

Plains:

Indus-Ganga-Brahmaputra region, Konkan, Kanara, Malabar, Coromandel, Northern Circars.

Plateaus:

Malwa, Chota Nagpur, Deccan, Meghalaya.

Peninsula:

Kathiawar, Kachchh.

Lakes:

Chilika, Pulicat.

Waterbodies:

Arabian Sea, Bay of Bengal, Palk Strait, Gulf of Kachchh, Gulf of Khambat,

Passes:

Karakoram, Shipki La, Nathu La, Bomdi La, Palghat, Bhorghat, Thalghat.

Rivers:

Indus, Jhelum, Chenab, Ravi, Beas, Sutlej, Ganga, Yamuna, Gomti, Ghaghara, Gandak, Kosi, Chambal, Betwa, Ken, Son, Damodar, Luni, Narmada, Tapi, Mahanadi, Godavari, Krishna, Kaveri, Brahmaputra.

Climate of India:

Movement of Southwest and North east monsoon winds from season to season, area of low and high pressure varying from season to season, direction of

westerly and easterly jet streams, average annual rainfall distribution in India, Main drought prone and flood prone areas.

Natural Vegetation:

Main area of: Tropical Evergreen, Tropical Deciduous, Tropical dry, Deltaic and Arid forests.

Population:

The States of India (according to the latest Census) for the following: The Lowest density of population, highest density of population, highest level of urbanization, lowest level of urbanisation, highest Index of Concentration of population, the highest sex ratio, the lowest sex ratio, the highest literacy, the lowest literacy;

Urban cities of Delhi, Mumbai, Chennai and Kolkata, Bengaluru, Hyderabad, Ahmedabad, Jaipur, Lucknow, Patna, (metropolitan and capital cities).

Resources of India:

Main region of intense cropping in India; Main State/regions of India for: wells, tanks, tube wells, perennial canals.

Agriculture:

Main producing States/regions of India for: Rice, Wheat, Maize, Jowar, Bajra, Ragi, Pulses, Coffee, Tea, Cotton, Jute, Sugarcane, Groundnut, Coconut.

Minerals:

Iron Ore (Keonjhar, Bellary, Raigarh, Singhbhum), Coal (Jharia, Bokaro, Raniganj), Petroleum (Digboi, Mumbai High, Ankleshwar, Bassein), Manganese (Sundergarh, Nagpur) Mica (Nellore, Bhilwara).

Power resources:

Nuclear Power (Kaiga, Kalpakkam, Tarapur, Rawatbhata, Narora, Kakrapara), Thermal Power (Bongaigaon, Santaldih, Panipat, Ahmedabad, Chandrapur, Neyyelli, Trombay, Vijaywada); Hydroelectric power stations (Bhakra Nangal, Hirakud, Damodar, Nagarjunasagar, Tungabhadra, Rihand).

Industries:

Sugar Industry: Ahmednagar, Pune and Coimbatore; Cotton Textiles: Mumbai, Ahmedabad Surat and Madurai.

Iron and Steel: TISCO(Jamshedpur), Bhilai Iron and Steel Plant (Bhilai), Vishakhapatnam Iron and Steel Plant (Vishakhapatnam);

Aluminium: INDAL (Hirakud), HINDALCO (Renukoot);

Cement: (Katni) and (Udaipur);

Transport equipment: Chittaranjan Locomotive Works (Kolkata) and DLW (Diesel Locomotive Works - Varanasi).

Automobile Industry: Maruti Udyog (Gurgaon), Premier Automobiles (Mumbai).

Ship Building Industry: Hindustan Shipyard Limited (Vishakhapatnam), Cochin Shipyard Limited (Kochi), Mazgon Dock (Mumbai); Garden Reach Workshop (Kolkata).

Aircraft Industry: HAL - Hindustan Aeronautics Limited (Nasik, Bengaluru, Kanpur);

Petro Chemicals: UDEX (Koyali) and IPCL (Vadodara);

Oil refineries: IOCL (Digboi, Barauni and Haldia);

Fertilizers: FCI (Sindri), IFFCO (Kandla).

Transport:

Trace the route of: National Highway 1, National Highway 2, National Highway 6, National highway 7, Golden Quadrilateral - 4 sides, North south Corridor, East West Corridor; State with the Highest Density of roads.

Ports:

Kandla, Mumbai, Marmagao, New Mangalore, Kochi, Tuticorin, Haldia, Chennai, Vishakhapatnam, Kolkata.

Hinterland:

Kolkata, Haldia.

Case studies:

Tracing of the Chattisgarh region, city of Bengaluru and its connectivity (road and rail ways) with the adjacent megacities & ports and hinterland of Haldia.

SKETCH MAPS

Candidates should be able to draw, label, understand and interpret the sketch maps related to the following topics:

- Locational setting of India;
- Relief and drainage of India;
- Climate;
- Population;
- Industries.

PAPER II: PRACTICAL WORK AND PROJECT WORK (30 Marks)

Candidates will be required to undertake the following Practical work and Project work .

1. Practical Work:

Any **four** of the following topics to be undertaken:

- (i) Drawing of scales: linear, graphic scales showing primary and secondary divisions; representative fractions and statement of scale methods.
- (ii) Drawing of cross-section or profiles of important contours, viz. ridge, plateau, escarpment, valley, conical hill, types of slope, sea cliffs, waterfalls, spurs, by using vertical exaggeration and horizontal equivalent.
- (iii) Understanding and illustrating location references of SOI maps.
- (iv) Map reading and interpretation of survey of India maps: Study will be based on representative portions of any **two** topographical sheets. It will include the description of location, extent, relief features, drainage, land use, settlement patterns, communications and inferences about human occupations and stage of economic development of the area.
- (v) Introduction to Geographic Information System: Elements of visual interpretation of remote sensing maps/ images.
Colour significance in the image and true colour (false colour composition): texture; size; shape; shadow; association.
(Reference material – Wikipedia, Google. earth, IIRS Hyderabad).
- (vi) Elementary principles of surveying an area: preparing two plans of school compound and/or a small area using Plane table/ GPS.

2. Project Work (Assignment):

Local field surveys on any **one** of the following will be submitted as Project Report. These surveys should be organized with a table of contents, sample taken and statistical methods used, interview schedule. The report should be organized systematically, and the conclusions should be clearly stated.

- (i) Agricultural land use survey.

Choose a district or topographical map of an area 1: 250000 and make a sketch map showing land use; compare the patterns of these. Alternatively, a local village could be chosen and the fields mapped from the cadastral map with information on the crops grown in different seasons and the location of the village, its roads and landmarks, if any.

- (ii) Household survey of about 30-60 households of a village or locality.

Family size, age structure, educational background, occupation, involvement of men and women in economic activity, educational service. Draw conclusions to reflect the economic development of the households.

- (iii) Amenity study.

Study of hospitals in a city, schools (school where you studied), post offices, municipal zones within the city (blocks in a village study) – reasons for travel (based on the importance and demand for the place), travel time, travel distance, mapping the hinterland of the service.

- (iv) Study of a manufacturing industry or a self-employed person.

Visit a manufacturing unit or self-employed person – cycle or car repair shop, small fabricating unit, factory if nearby and find out – source of raw material, supply routes, final product, areas where it is sent, manpower strength and their organization.

- (v) Area development of a multipurpose river valley project – impact on the region.

Self-explanatory.

The Practical Work and the Project Work will be assessed by the teacher and a Visiting Examiner appointed locally and approved by the Council. No question paper for practical work and project work will be set by the Council.

Evaluation of Practical Work and Project Work will be as follows:

Practical file (Sessional Record):	10 marks
Assignment (Project Report):	10 marks
Viva voce:	10 marks