

**GOVERNMENT DEGREE COLEGE FOR WOMEN
(AUTONOMOUS)**

BEGUMPET, HYDERABAD
Re-Accredited with 'B' Grade by NAAC

DEPARTMENT OF GEOGRAPHY

Board of Studies Meeting on 17-02-2021



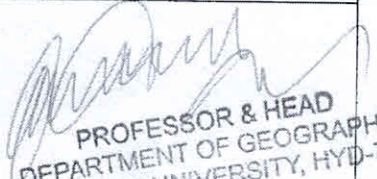

The Board of studies meeting for the Department of Geography is held at 11.30 hours on 17 - 02 - 2021 in the Department of Geography, GDCW (A), Begumpet, Hyderabad.

The following resolutions have taken in the meeting:

- i) The CBCS syllabus of Osmania University is approved for BA Geography I and II semesters for AY 2020-21.
- ii) Model question papers of I & II semesters for I year BA Geography for AY 2020-21 has been approved.
- iii) It is agreed and approved to have 100 marks per paper per semester in which 60 marks for semester exam and 40 marks for internal assessment exam. Internal Assessment Exam consists of (30 M for periodical test (20 q +10 MCQ CBT) + 5 Assignment+ 5 Student seminar) for Semesters I & II and 50 marks per paper for practical examination for I & II semesters AY 2020-21.
- iv) It is agreed and approved to prepare question papers unit wise in Part – A and B.
- v) It is approved that the minimum pass marks is 40 (24 marks mandatory in semester exam and on the whole 40 marks) for semester exam and minimum pass marks for practical exam is 20.
- vi) It is approved to conduct semester wise practical exams for both semesters for I year for the AY 2020-21.
- vii) It is agreed and approved the list of examiners for paper setting for I & II semesters.

Contd.... Page ... 6

The following members are present in the meeting:

| S. No | NAME | ADDRESS | SIGNATURE |
|-------|--|---|--|
| 1 | Dr. G. Narsimulu In charge HOD & Chairman BOS | Government Degree College for Women (A), Begumpet, Hyderabad |  |
| 2 | Dr. L Ashok Kumar Chairman BOS, Department of Geography, OU. | Department of Geography University College of Science Osmania University, Hyderabad. |  CHAIRMAN Board of Studies in Geography Univ College of Science Osmania University, Hyd-7 |
| 3 | Prof. A. Bala Kishan Subject Expert | Department of Geography University College of Science Osmania University, Hyderabad. |  PROFESSOR & HEAD DEPARTMENT OF GEOGRAPHY OSMANIA UNIVERSITY, HYD-7. TELANGANA. |
| 4 | Dr. R. Sudhakar Goud Subject Expert | Department of Geo-informatics, South Campus, Telangana University Bikanoor, Kamareddy Dist | |
| 5 | Dr. Vigneshwar Mekha Assistant Professor © | Department of Geography Government Degree College for Women (A), Begumpet, Hyderabad |  |

GOVERNMENT DEGREE COLLEGE FOR WOMEN
(AUTONOMOUS)

BEGUMPET, HYDERBAD

(Re-accredited by NAAC with "B" Grade)

B. A/B.Sc. I year, Revised Semester wise Syllabus (w. e. f. 2020-21)

Subject: Geography

Semester – I

Paper - I: Elements of Geomorphology

UNIT-I:

1. Land and Sea: Formation and distribution
2. Theories: Isostasy, Continental Drift, Plate Tectonics

UNIT-II:

3. Interior of Earth
4. Earthquakes
5. Volcanoes
6. Rocks
7. Weathering
8. Mass-wasting

UNIT-III:

9. Fluvial Landforms: Erosion and Depositional
10. Aeolian landforms: Erosion and Depositional

UNIT-IV:

11. Karst topography: Erosion and Depositional
12. Glacial topography: Erosion and Depositional


Basic Texts:


1. Critchfield (1997): General Climatology, Prentice Hall of India, New Delhi.
2. Strahler A. H. and Strahler A.N. (1971): Physical Geography, Wiley eastern, New Delhi.
3. Trewartha (1968): An Introduction to Climate, Mc Graw Hill, New Delhi.

Additional Texts:

4. Tikka R. N. (1999): Physical Geography, Kedarnath & Ramnath & Co., Meerut.
5. Dasgupta and Kapoor (1998): Physical Geography, Chand & Co., New Delhi.
6. Lal, D.S. (1996): Climatology, Chaitanya Publishing House, Allahabad.
7. Savinder Singh (2013): Geomorphology, Prayag Pustak Bhavan, Allahabad.
8. Sparks B.W. (1965): Geomorphology, Brill' Academic Publishers.


CHAIRMAN


Board of Studies in Geography
Univ College of Science
Osmania University, Hyd-7.


7
PROFESSOR & HEAD
DEPARTMENT OF GEOGRAPHY
OSMANIA UNIVERSITY, HYD-7,
TELANGANA.

**GOVERNMENT DEGREE COLLEGE FOR WOMEN
(AUTONOMOUS)**

BEGUMPET, HYDERBAD

(Re-accredited by NAAC with "B" Grade)

B. A/B.Sc. I year, Revised Practical Syllabus (w. e. f. 2020-21)

Subject: Geography

Paper - I

PRACTICAL – I: ELEMENTS OF MAPPING

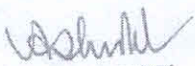
1. Maps: Types – Cadastral – Topographical – Atlas – General Maps – Thematic Maps
2. Scales: Classification – Statement – Representative Fraction (R.F.) – Construction of Linear – Diagonal Scales
3. Representation of Relief – Spot heights, Bench marks, Layer colouring, Contours – Hachures and Hill shading, contours drawing.
4. Profile drawing and Interpretation: Simple Profile – Composite profile – Super imposed profile – Projected profile
5. Interpretation of topographical sheets


Basic Texts:

1. Monkhouse, F.J. and Wilkinson, H.R. (1968) Maps and Diagrams, Methuen, London.
2. Misra, R.P. and Ramesh, A (1999) Fundamentals of Cartography, Mac Millan, New Delhi.


Additional Texts:

1. Gopal Singh, (1996) Map Work and Practical Geography, Vikas Publishing House, New Delhi.
2. Singh, R.L. and Dutt, P.K. (1968) Elements of Practical Geography, Students Friends, Allahabad.
3. Negi, B.S. (1998) Practical Geography, Kedarnath and Ramnath, Meerut.


CHAIRMAN
Board of Studies in Geography
Univ College of Science
Osmania University, Hyd-7


PROFESSOR & HEAD
DEPARTMENT OF GEOGRAPHY
OSMANIA UNIVERSITY, HYD-7.
TELANGANA.





GOVERNMENT DEGREE COLLEGE FOR WOMEN
(AUTONOMOUS)

BEGUMPET, HYDERBAD

(Re-accredited by NAAC with "B" Grade)

B. A/B.Sc. I year, Revised Semester wise Syllabus (w. e. f. 2020-21)

Subject: Geography

Semester – II

Paper - II: **Climatology and Oceanography**

UNIT-I: (Climatology)

1. Atmosphere: Structure and Composition
2. Insolation: Factors influencing the incidence and distribution
3. Temperature: Horizontal and Vertical Distribution
4. Pressure: Influencing factors – High and Low Pressure Areas, Global Pressure Belts

UNIT-II:

5. Winds: Local, Periodic and Planetary
6. Cyclones – Formation, Distribution and Impacts: Tropical and Temperate
7. Humidity: Absolute and Relative
8. Clouds: Types, Formation and Potentials
9. Precipitation: Types, Formation, Distribution

UNIT-III: (Oceanography)

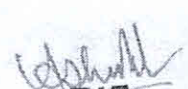
10. Submarine Relief: Continental Shelf, Continental Slope, Abyssal Plain, Ocean Deeps and Trenches, Mid-Oceanic ridges
11. Temperature: Horizontal and Vertical Distribution
12. Salinity: Factors and Distribution

UNIT-IV:

13. Waves and Tides: Types and Formation
14. Ocean Currents: Types and Factors Responsible - Currents of Atlantic, Pacific and Indian Oceans
15. Ocean deposits – Types and Distribution
16. Marine Resources and their economic significance

Reference Books:

1. Cole and King (1975): Oceanography for Geographers, E. Arnold, London.
2. Ken Briggs (1985): Physical Geography: Process and System, Holder and Stoughton, London.
3. Rice R.J. (1996): Fundamentals of Geography Addison – Wesley.
4. Sharma, R.C. and Vatal M. (1997): Oceanography for Geographers, Chaitanya Publishing House, Allahabad.


CHAIRMAN
Board of Studies in Geography
Univ College of Science
Osmania University, Hyd-7.


PROFESSOR & HEAD
DEPARTMENT OF GEOGRAPHY
OSMANIA UNIVERSITY, HYD-7.
TELANGANA.



**GOVERNMENT DEGREE COLLEGE FOR WOMEN
(AUTONOMOUS)**

BEGUMPET, HYDERBAD

(Re-accredited by NAAC with "B" Grade)

B. A/B.Sc. I year, Revised Practical Syllabus (w. e. f. 2020-21)

Subject: Geography

Paper - II

PRACTICAL – II: BASIC STATISTICS AND WEATHER MAPS (1 Credit)


1. Sources of data, classification and Tabulation of data.
2. Central tendencies – Mean, median and mode
3. Measure of Dispersion – mean deviation and standard deviation
4. Correlation – Karl Pearson and spearman.
5. Weather map: weather symbols and interpretation of Indian daily weather maps.

REFERENCES:

1. Aslam Mohmood: Statistical Methods in Geographical Studies. Rajesh Publication, New Delhi.
2. Singh, L.R. (2006): Practical Geography, Sharada Pustak Bhavan.
3. Gregory, S (1963): Statistical Methods and the Geographer, Longmans, London
4. King, L.J.: Statistical Analysis in Geography, Prentice Hall, Englewood Cliffs, New Jersey.
5. Zamir, A. (2002): Statistical Geography: Methods and Applications, Rawat Publications, Jaipur.
6. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
7. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.


CHAIRMAN

**Board of Studies in Geography
Univ College of Science
Osmania University, Hyd-7.**


**PROFESSOR & HEAD
DEPARTMENT OF GEOGRAPHY
OSMANIA UNIVERSITY, HYD-7.
TELANGANA.**







UNION PUBLIC SERVICE COMMISSION

EXAMINATION NOTICE NO. 04/2021-CSP

DATE: 04/03/2021

(LAST DATE FOR RECEIPT OF APPLICATIONS: 24/03/2021) of CIVIL SERVICES EXAMINATION, 2021

(The Commission's Website: www.upsc.gov.in)

IMPORTANT

1. **CANDIDATES TO ENSURE THEIR ELIGIBILITY FOR THE EXAMINATION:** All candidates (male/female/transgender) are requested to carefully read the Rules of Civil Services Examination notified by the Government (Department of Personnel and Training) and this Notice of Examination derived from these Rules. The Candidates applying for the examination should ensure that they fulfill all eligibility conditions for admission to examination. Their admission to all the stages of the examination will be purely **provisional** subject to satisfying the prescribed eligibility conditions. Mere issue of e-Admit Card to the candidate will not imply that his/her candidature has been finally cleared by the Commission. The Commission takes up verification of eligibility conditions with reference to original documents only after the candidate has qualified for Interview/Personality Test.
2. **HOW TO APPLY:**

Candidates are required to apply Online by using the website <https://upsconline.nic.in> Detailed instructions for filling up online applications are available on the above mentioned website. Brief Instructions for filling up the "Online Application Form" given in Appendix-IIA.
- 2.1 Candidate should have details of one Photo ID Card viz. Aadhaar Card/Voter Card/PAN Card/Passport/Driving Licence/Any other Photo ID Card issued by the State/Central Government. The details of this Photo ID Card will have to be provided by the candidate while filling up the online application form. The candidates will have to upload a scanned copy of the Photo ID whose details have been provided in the online application by him/her. This Photo ID Card will be used for all future referencing and the candidate is advised to carry this Photo ID Card while appearing for Examination/Personality Test.
- 2.2 The facility of withdrawal of Application is available for those candidates who do not want to appear for Civil Services (Preliminary) Examination. In this regard, Instructions are mentioned in Appendix IIB of this Examination Notice
3. **LAST DATE FOR RECEIPT OF APPLICATIONS :**

The online Applications can be filled up to 24th March, 2021 till 6:00 PM. The eligible candidates shall be issued an e-Admit Card three weeks before the commencement of the examination. The e-Admit Card will be made available in the UPSC website [<https://upsconline.nic.in>] for downloading by candidates. No Admit Card will be sent by post.
4. **PENALTY FOR WRONG ANSWERS:**

Candidates should note that there will be penalty (negative marking) for wrong answers marked by a candidate in the Objective Type Question Papers.
5. **FACILITATION COUNTER FOR GUIDANCE OF CANDIDATES:**

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

1912

REPORT ON THE PROGRESS OF THE WORK

During the year 1912 the work of the Department has been carried on in accordance with the programme of work approved by the Council at its meeting on the 15th of January 1912.

The first part of the work has been devoted to the study of the general principles of the theory of the structure of the atom, and to the determination of the constants of the theory.

The second part of the work has been devoted to the study of the properties of the various elements of the periodic system, and to the determination of their atomic weights.

The third part of the work has been devoted to the study of the properties of the various compounds of the elements, and to the determination of their molecular weights.

The fourth part of the work has been devoted to the study of the properties of the various acids and bases, and to the determination of their dissociation constants.

The fifth part of the work has been devoted to the study of the properties of the various salts, and to the determination of their solubility products.

The sixth part of the work has been devoted to the study of the properties of the various organic compounds, and to the determination of their boiling points and refractive indices.

The seventh part of the work has been devoted to the study of the properties of the various inorganic compounds, and to the determination of their melting points and specific heats.

The eighth part of the work has been devoted to the study of the properties of the various minerals, and to the determination of their specific gravities and refractive indices.

The ninth part of the work has been devoted to the study of the properties of the various metals, and to the determination of their specific heats and thermal conductivities.

The tenth part of the work has been devoted to the study of the properties of the various alloys, and to the determination of their specific heats and thermal conductivities.

The eleventh part of the work has been devoted to the study of the properties of the various gases, and to the determination of their specific heats and thermal conductivities.

The twelfth part of the work has been devoted to the study of the properties of the various liquids, and to the determination of their specific heats and thermal conductivities.

The thirteenth part of the work has been devoted to the study of the properties of the various solids, and to the determination of their specific heats and thermal conductivities.

The fourteenth part of the work has been devoted to the study of the properties of the various crystals, and to the determination of their specific heats and thermal conductivities.

The fifteenth part of the work has been devoted to the study of the properties of the various minerals, and to the determination of their specific gravities and refractive indices.

UPSC MAINS

transmission with noise; signal to noise ratio. Linear CW modulation : Amplitude modulation : DSB, DSB-SC and SSB. Modulators and Demodulators; Phase and Frequency modulation : PM & FM signals; narrow band FM; generation & detection of FM and PM, Deemphasis, Preemphasis. CW modulation system : Superhetrodyne receivers, AM receivers, communication receivers, FM receivers, phase locked loop, SSB receiver Signal to noise ratio calculation or AM and FM receivers.

PAPER II

1. Control Systems :

Elements of control systems; block-diagram representations; open-loop & closed-loop systems; principles and applications of feed-back. Control system components. LTI systems : time-domain and transform-domain analysis. Stability : Routh Hurwitz criterion, root-loci, Bode-plots and polar plots, Nyquist's criterion; Design of lead-lag compensators. Proportional, PI, PID controllers. State-variable representation and analysis of control systems.

2. Microprocessors and Microcomputers :

PC organisation; CPU, instruction set, register setting diagram, programming, interrupts, memory interfacing, I/O interfacing, programmable peripheral devices.

3. Measurement and Instrumentation :

Error analysis; measurement of current voltage, power, energy, power-factor, resistance, inductance, capacitance and frequency; bridge measurements. Signal conditioning circuit; Electronic measuring instruments : multimeter, CRO, digital voltmeter, frequency counter, Q-meter, spectrum-analyser, distortion-meter. Transducers : thermocouple, thermistor, LVDT, strain-gauge, piezo-electric crystal.

4. Power Systems: Analysis and Control :

Steady-state performance of overhead transmission lines and cables; principles of active and reactive power transfer and distribution; per-unit quantities; bus admittance and impedance matrices; load flow; voltage control and power factor correction; economic operation; symmetrical components, analysis of symmetrical and unsymmetrical faults. Concepts of system stability : swing curves and equal area criterion. Static VAR system. Basic concepts of HVDC transmission.

5. Power System Protection :

Principles of overcurrent, differential and distance protection. Concept of solid state relays. Circuit breakers. Computer aided protection : introduction; line, bus, generator, transformer protection; numeric relays and application of DSP to protection.

6. Digital Communication :

Pulse code modulation (PCM), differential pulse code modulation (DPCM), delta modulation (DM), Digital modulation and demodulation schemes : amplitude, phase and frequency keying schemes (ASK, PSK, FSK). Error control coding : error detection and correction, linear block codes, convolution codes. Information measure and source coding. Data networks, 7-layer architecture.

GEOGRAPHY

PAPER I

PRINCIPLES OF GEOGRAPHY

analysis; basic network theorems and applications; transient analysis : RL, RC and RLC circuits; sinusoidal steady state analysis; resonant circuits; coupled circuits; balanced 3-phase circuits. Two-port networks.

2. Signals and Systems :

Representation of continuous-time and discrete-time signals and systems; LTI systems; convolution; impulse response; time-domain analysis of LTI systems based on convolution and differential/difference equations. Fourier transform, Laplace transform, Z-transform, Transfer function. Sampling and recovery of signals DFT, FFT Processing of analog signals through discrete-time systems.

3. E.M. Theory :

Maxwell's equations, wave propagation in bounded media. Boundary conditions, reflection and refraction of plane waves. Transmission lines : travelling and standing waves, impedance matching, Smith chart.

4. Analog Electronics :

Characteristics and equivalent circuits (large and small-signal) of Diode, BJT, JFET and MOSFET. Diode circuits : Clipping, clamping, rectifier. Biasing and bias stability. FET amplifiers. Current mirror; Amplifiers : single and multi-stage, differential, operational feedback and power. Analysis of amplifiers; frequency-response of amplifiers. OPAMP circuits. Filters; sinusoidal oscillators : criterion for oscillation; single-transistor and OPAMP configurations. Function generators and wave-shaping circuits. Linear and switching power supplies.

5. Digital Electronics :

Boolean algebra; minimisation of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinational circuits : arithmetic circuits, code converters, multiplexers and decoders. Sequential circuits: latches and flip-flops, counters and shift-registers. Comparators, timers, multivibrators. Sample and hold circuits, ADCs and DACs. Semiconductor memories. Logic implementation using programmable devices (ROM, PLA, FPGA).

6. Energy Conversion :

Principles of electromechanical energy conversion : Torque and emf in rotating machines. DC machines : characteristics and performance analysis; starting and speed control of motors. Transformers : principles of operation and analysis; regulation, efficiency; 3-phase transformers. 3-phase induction machines and synchronous machines : characteristics and performance analysis; speed control.

7. Power Electronics and Electric Drives :

Semi-conductor power devices : diode, transistor, thyristor, triac, GTO and MOSFET-static characteristics and principles of operation; triggering circuits; phase control rectifiers; bridge converters : fully-controlled and half-controlled; principles of thyristor choppers and inverters; DC-DC converters; Switch mode inverter; basic concepts of speed control of dc and ac motor drives applications of variable-speed drives.

8. Analog Communication :

Random variables : continuous, discrete; probability, probability functions. Statistical averages; probability models; Random signals and noise : white noise, noise equivalent bandwidth; signal

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

Physical Geography :

1. **Geomorphology** : Factors controlling landform development; endogenetic and exogenetic forces; Origin and evolution of the earth's crusts; Fundamentals of geomagnetism; Physical conditions of the earth's interior; Geosynclines; Continental drift; Isostasy; Plate tectonics; Recent views on mountain building; Volcanicity; Earthquakes and Tsunamis; Concepts of geomorphic cycles and Land scape development; Denudation chronology; Channel morphology; Erosion surfaces; Slope development; Applied Geomorphology; Geomorphology, economic geology and environment.
2. **Climatology** : Temperature and pressure belts of the world; Heat budget of the earth; Atmospheric circulation; Atmospheric stability and instability. Planetary and local winds; Monsoons and jet streams; Air masses and fronts; Temperate and tropical cyclones; Types and distribution of precipitation; Weather and Climate; Koppen's Thornthwaite's and Trewartha's classification of world climate; Hydrological cycle; Global climatic change, and role and response of man in climatic changes; Applied climatology and Urban climate.
3. **Oceanography** : Bottom topography of the Atlantic, Indian and Pacific Oceans; Temperature and salinity of the oceans; Heat and salt budgets, Ocean deposits; Waves, currents and tides; Marine resources; biotic, mineral and energy resources; Coral reefs coral bleaching; Sea-level changes; Law of the sea and marine pollution.
4. **Biogeography** : Genesis of soils; Classification and distribution of soils; Soil profile; Soil erosion, Degradation and conservation; Factors influencing world distribution of plants and animals; Problems of deforestation and conservation measures; Social forestry, agro-forestry; Wild life; Major gene pool centres.
5. **Environmental Geography** : Principle ecology; Human ecological adaptations; Influence of man on ecology and environment; Global and regional ecological changes and imbalances; Ecosystem their management and conservation; Environmental degradation, management and conservation; Biodiversity and sustainable development; Environmental policy; Environmental hazards and remedial measures; Environmental education and legislation.

Human Geography :

1. **Perspectives in Human Geography** : Areal differentiation; Regional synthesis; Dichotomy and dualism; Environmentalism; Quantitative revolution and locational analysis; Radical, behavioural, human and welfare approaches; Languages, religions and secularisation; Cultural regions of the world; Human development index.
2. **Economic Geography** : World economic development: measurement and problems; World resources and their distribution; Energy crisis; the limits to growth; World agriculture: typology of agricultural regions; Agricultural inputs and productivity; Food and nutrition problems; Food security; famine: causes, effects and remedies; World industries: location patterns and problems; Patterns of world trade.
3. **Population and Settlement Geography** : Growth and distribution of world population; Demographic attributes; Causes and consequences of migration; Concepts of over-under-and optimum population; Population theories, world population problems and policies, Social well-being and quality of life; Population as social capital.
Types and patterns of rural settlements; Environmental issues in rural settlements;

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

Hierarchy of urban settlements; Urban morphology; Concept of primate city and rank-size rule; Functional classification of towns; Sphere of urban influence; Rural-urban fringe; Satellite towns; Problems and remedies of urbanization; Sustainable development of cities.

4. **Regional Planning** : Concept of a region; Types of regions and methods of regionalisation; Growth centres and growth poles; Regional imbalances; Regional development strategies; Environmental issues in regional planning; Planning for sustainable development.
5. **Models, Theories and Laws in Human Geography** : System analysis in Human geography; Malthusian, Marxian and demographic transition models; Central Place theories of Christaller and Losch; Perroux and Boudeville; Von Thunen's model of agricultural location; Weber's model of industrial location; Ostov's model of stages of growth. Heart-land and Rimland theories; Laws of international boundaries and frontiers.

PAPER II

GEOGRAPHY OF INDIA

1. **Physical Setting** : Space relationship of India with neighbouring countries; Structure and relief; Drainage system and watersheds; Physiographic regions; Mechanism of Indian monsoons and rainfall patterns; Tropical cyclones and western disturbances; Floods and droughts; Climatic regions; Natural vegetation, Soil types and their distributions.
2. **Resources** : Land, surface and ground water, energy, minerals, biotic and marine resources, Forest and wild life resources and their conservation; Energy crisis.
3. **Agriculture** : Infrastructure: irrigation, seeds, fertilizers, power; Institutional factors; land holdings, land tenure and land reforms; Cropping pattern, agricultural productivity, agricultural intensity, crop combination, land capability; Agro and social-forestry; Green revolution and its socio-economic and ecological implications; Significance of dry farming; Livestock resources and white revolution; Aqua-culture; Sericulture, Agriculture and poultry; Agricultural regionalisation; Agro-climatic zones; Agro-ecological regions.
4. **Industry** : Evolution of industries; Locational factors of cotton, jute, textile, iron and steel, aluminium, fertiliser, paper, chemical and pharmaceutical, automobile, cottage and ago-based industries; Industrial houses and complexes including public sector underkings; Industrial regionalisation; New industrial policy; Multinationals and liberalisation; Special Economic Zones; Tourism including ecotourism.
5. **Transport, Communication and Trade** : Road, railway, waterway, airway and pipeline net works and their complementary roles in regional development; Growing importance of ports on national and foreign trade; Trade balance; Trade Policy; Export processing zones; Developments in communication and information technology and their impacts on economy and society; Indian space programme.
6. **Cultural Setting** : Historical Perspective of Indian Society; Racial linguistic and ethnic diversities; religious minorities; Major tribes, tribal areas and their problems; Cultural regions; Growth, distribution and density of population; Demographic attributes: sex-ratio, age structure, literacy rate, work-force, dependency ratio, longevity; migration (inter-regional, interaregional and international) and associated problems; Population problems and policies; Health indicators.
7. **Settlements** : Types, patterns and morphology of rural settlements; Urban developments; Morphology of Indian cities; Functional classification of Indian cities; Conurbations and

metropolitan regions; Urban sprawl; Slums and associated problems; Town planning; Problems of urbanisation and remedies.

8. **Regional Development and Planning:** Experience of regional planning in India; Five Year Plans; Integrated rural development programmes; Panchayati Raj and decentralised planning; Command area development; Watershed management; Planning for backward area, desert, drought-prone, hill tribal area development; Multi-level planning; Regional planning and development of island territories.
9. **Political Aspects :** Geographical basis of Indian federalism; State reorganisation; Emergence of new states; Regional consciousness and inter-state issues; International boundary of India and related issues; Cross-border terrorism; India's role in world affairs; Geopolitics of South Asia and Indian Ocean realm.
10. **Contemporary Issues :** Ecological issues: Environmental hazards: landslides, earthquakes, Tsunamis, floods and droughts, epidemics; Issues related to environmental pollution; Changes in patterns of land use; Principles of environmental impact assessment and environmental management; Population explosion and food security; Environmental degradation; Deforestation, desertification and soil erosion; Problems of agrarian and industrial unrest; Regional disparities in economic development; Concept of sustainable growth and development; Environmental awareness; Linkage of rivers; Globalisation and Indian economy.

NOTE : Candidates will be required to answer one compulsory map question pertinent to subjects covered by this paper.

GEOLOGY

PAPER I

1. General Geology :

The Solar System, meteorites, origin and interior of the earth and age of earth; Volcanoes—causes and products, Volcanic belts. Earthquakes—causes, effects, seismic zone of India; Island arcs, trenches and mid-ocean ridges; Continental drift; Seafloor spreading, plate tectonics. Isostasy.

2. Geomorphology and Remote Sensing :

Basic concepts of geomorphology. Weathering and soil formations; Landforms, slopes and drainage. Geomorphic cycles and their interpretation. Morphology and its relation to structures and lithology; Coastal geomorphology; Applications of geomorphology in mineral prospecting, civil engineering; hydrology and environmental studies; Geomorphology of Indian sub-continent.

Aerial photographs and their interpretation—merits and limitations; The Electromagnetic spectrum. Orbiting

Satellites and Sensor Systems. Indian Remote Sensing Satellites. Satellite data products; Applications of remote sensing in geology; The Geographic Information System (GIS) and Global Positioning System (GPS)—its applications.

3. Structural Geology :

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

Principles of geologic mapping and map reading, projection diagrams, Stress and strain ellipsoid and stress-strain relationships of elastic, plastic and viscous materials; Strain markers in deformed rocks. Behaviour of minerals and rocks under deformation conditions. Folds and faults classification and mechanics; Structural analysis of folds, foliations, lineations, joints and faults, unconformities; Time-relationship between crystallization and deformation.

4. Paleontology :

Species—definition and nomenclature; Megafossils and Microfossils. Modes of preservation of fossils; Different kinds of microfossils; Application of microfossils in correlation, petroleum exploration, paleoclimatic and paleoceanographic studies; Evolutionary trend in Hominidae, Equidae and Proboscidae. Siwalik fauna.

Gondwana flora and fauna and its importance; Index fossils and their significance.

5. Indian Stratigraphy :

Classification of stratigraphic sequences: lithostratigraphic, biostratigraphic, chrono-stratigraphic and magnetostratigraphic and their interrelationships; Distribution and classification of Precambrian rocks of India; Study of stratigraphic distribution and lithology of Phanerozoic rocks of India with reference to fauna, flora and economic importance. Major boundary problems—Cambrian/ Precambrian, Permian/Triassic, Cretaceous/Tertiary and Pliocene/Pleistocene; Study of climatic conditions, paleogeography and igneous activity in the Indian sub-continent in the geological past. Tectonic framework of India. Evolution of the Himalayas.

6. Hydrogeology and Engineering Geology :

Hydrologic cycle and genetic classification of water; Movement of subsurface water; Springs; Porosity, permeability, hydraulic conductivity, transmissivity and storage coefficient, classification of aquifers; Water-bearing characteristics of rocks; Groundwater chemistry. Salt water intrusion. Types of wells. Drainage basin morphometry; Exploration for groundwater; Groundwater recharge; Problems and management of groundwater; Rainwater harvesting; Engineering properties of rocks; Geological investigations for dams, tunnels highways, railway and bridges; Rock as construction material; Landslides causes, prevention and rehabilitation; Earthquake-resistant structures.

PAPER II

1. Mineralogy :

Classification of crystals into systems and classes of symmetry; International system of crystallographic notation; Use of projection diagrams to represent crystal symmetry; Elements of X-ray crystallography.

Physical and chemical characters of rock forming silicate mineral groups; Structural classification of silicates; Common minerals of igneous and metamorphic rocks; Minerals of the carbonate, phosphate, sulphide and halide groups; Clay minerals.

Optical properties of common rock forming minerals; Pleochroism, extinction angle, double refraction, birefringence, twinning and dispersion in minerals.

2. Igneous and Metamorphic Petrology :

- (i) comprehension of given passages.
- (ii) Precis Writing.
- (iii) Usage and Vocabulary.
- (iv) Short Essays.
- (v) Translation from English to the Indian Language and vice-versa.

Note 1 : The papers on Indian Languages and English will be of Matriculation or equivalent standard and will be of qualifying nature only. The marks obtained in these papers will not be counted for ranking.

Note 2 : The candidates will have to answer the English and Indian Languages papers in English and the respective Indian language (except where translation is involved).

PAPER-I

Essay: Candidates may be required to write essays on multiple topics. They will be expected to keep closely to the subject of the essay to arrange their ideas in orderly fashion, and to write concisely. Credit will be given for effective and exact expression.

PAPER-II

General Studies-I: Indian Heritage and Culture, History and Geography of the World and Society.

- Indian culture will cover the salient aspects of Art Forms, literature and Architecture from ancient to modern times.
- Modern Indian history from about the middle of the eighteenth century until the present-significant events, personalities, issues.
- The Freedom Struggle — its various stages and important contributors/contributions from different parts of the country.
- Post-independence consolidation and reorganization within the country.
- History of the world will include events from 18th century such as industrial revolution, world wars, redrawing of national boundaries, colonization, decolonization, political philosophies like communism, capitalism, socialism etc.— their forms and effect on the society.
- Salient features of Indian Society, Diversity of India.
- Role of women and women's organization, population and associated issues, poverty and developmental issues, urbanization, their problems and their remedies.
- Effects of globalization on Indian society.
- Social empowerment, communalism, regionalism & secularism.
- Salient features of world's physical geography.
- Distribution of key natural resources across the world (including South Asia and the Indian sub-continent); factors responsible for the location of primary, secondary, and tertiary sector industries in various parts of the world (including India).
- Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, cyclone

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

etc., geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

PAPER-III

General Studies- II: Governance, Constitution, Polity, Social Justice and International relations.

- Indian Constitution—historical underpinnings, evolution, features, amendments, significant provisions and basic structure.
- Functions and responsibilities of the Union and the States, issues and challenges pertaining to the federal structure, devolution of powers and finances up to local levels and challenges therein.
- Separation of powers between various organs dispute redressal mechanisms and institutions.
- Comparison of the Indian constitutional scheme with that of other countries.
- Parliament and State legislatures—structure, functioning, conduct of business, powers & privileges and issues arising out of these.
- Structure, organization and functioning of the Executive and the Judiciary—Ministries and Departments of the Government; pressure groups and formal/informal associations and their role in the Polity.
- Salient features of the Representation of People's Act.
- Appointment to various Constitutional posts, powers, functions and responsibilities of various Constitutional Bodies.
- Statutory, regulatory and various quasi-judicial bodies.
- Government policies and interventions for development in various sectors and issues arising out of their design and implementation.
- Development processes and the development industry —the role of NGOs, SHGs, various groups and associations, donors, charities, institutional and other stakeholders.
- Welfare schemes for vulnerable sections of the population by the Centre and States and the performance of these schemes; mechanisms, laws, institutions and Bodies constituted for the protection and betterment of these vulnerable sections.
- Issues relating to development and management of Social Sector/Services relating to Health, Education, Human Resources.
- Issues relating to poverty and hunger.
- Important aspects of governance, transparency and accountability, e-governance-applications, models, successes, limitations, and potential; citizens charters, transparency & accountability and institutional and other measures.
- Role of civil services in a democracy.
- India and its neighborhood- relations.
- Bilateral, regional and global groupings and agreements involving India and/or affecting

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

India's interests.

- Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.
- Important International institutions, agencies and fora- their structure, mandate.

PAPER-IV

General Studies-III: Technology, Economic Development, Bio diversity, Environment, Security and Disaster Management

- Indian Economy and issues relating to planning, mobilization, of resources, growth, development and employment.
- Inclusive growth and issues arising from it.
- Government Budgeting.
- Major crops-cropping patterns in various parts of the country, - different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.
- Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.
- Food processing and related industries in India- scope' and significance, location, upstream and downstream requirements, supply chain management.
- Land reforms in India.
- Effects of liberalization on the economy, changes in industrial policy and their effects on industrial growth.
- Infrastructure: Energy, Ports, Roads, Airports, Railways etc.
- Investment models.
- Science and Technology- developments and their applications and effects in everyday life.
- Achievements of Indians in science & technology; indigenization of technology and developing new technology.
- Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.
- Conservation, environmental pollution and degradation, environmental impact assessment.
- Disaster and disaster management.
- Linkages between development and spread of extremism.
- Role of external state and non-state actors in creating challenges to internal security.
- Challenges to internal security through communication networks, role of media and social networking sites in internal security challenges, basics of cyber security; money-laundering and its prevention.

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.

- Security challenges and their management in border areas - linkages of organized crime with terrorism.
- Various Security forces and agencies and their mandate.

PAPER-V

General Studies- IV: Ethics, Integrity and Aptitude

- This paper will include questions to test the candidates' attitude and approach to issues relating to integrity, probity in public life and his problem solving approach to various issues and conflicts faced by him in dealing with society. Questions may utilise the case study approach to determine these aspects. The following broad areas will be covered :
- **Ethics and Human Interface:** Essence, determinants and consequences of Ethics in-human actions; dimensions of ethics; ethics - in private and public relationships. Human Values - lessons from the lives and teachings of great leaders, reformers and administrators; role of family society and educational institutions in inculcating values.
- **Attitude:** content, structure, function; its influence and relation with thought and behaviour; moral and political attitudes; social influence and persuasion.
- **Aptitude and foundational values for Civil Service,** integrity, impartiality and non-partisanship, objectivity, dedication to public service, empathy, tolerance and compassion towards the weaker-sections.
- **Emotional intelligence-concepts,** and their utilities and application in administration and governance.
- **Contributions of moral thinkers and philosophers from India and world.**
- **Public/Civil service values and Ethics in Public administration:** Status and problems; ethical concerns and dilemmas in government and private institutions; laws, rules, regulations and conscience as sources of ethical guidance; accountability and ethical governance; strengthening of ethical and moral values in governance; ethical issues in international relations and funding; corporate governance.
- **Probity in Governance:** Concept of public service; Philosophical basis of governance and probity; Information sharing and transparency in government, Right to Information, Codes of Ethics, Codes of Conduct, Citizen's Charters, Work culture, Quality of service delivery, Utilization of public funds, challenges of corruption.
- **Case Studies on above issues.**

PAPER-VI & PAPER VII

Optional Subject Papers I & II

Candidate may choose any optional subject from amongst the List of Optional Subjects given in Para 2.

AGRICULTURE

PAPER-I

Ecology and its relevance to man, natural resources, their sustainable management and conservation. Physical and social environment as factors of crop distribution and production. Agro

Government strives to have a workforce which reflects gender balance and women candidates are encouraged to apply.