

MPSC

MAHARASHTRA PUBLIC SERVICE COMMISSION

MAHARASHTRA ENGINEERING SERVICES

Group A & B Combined Preliminary Examination

GENERAL STUDIES

with Special reference to Maharashtra

Comprehensive Theory
with Practice Questions and Previous Solved Papers



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Corporate Office: 44-A/4, Kalu Sarai (Near Hauz Khas Metro Station), New Delhi-110016

E-mail: infomep@madeeasy.in

Contact: 011-45124660, 08860378007

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Maharashtra Engineering Services, Group A & B Combined Preliminary Examination: General Studies with *Special reference to Maharashtra*

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Preface

The compilation of this book **General Studies with Special reference to Maharashtra** is motivated by the desire to provide a concise book which can benefit students who are preparing for Maharashtra Engineering Services, Group A & B Combined Preliminary Examination.



B. Singh (Ex. IES)

This textbook provides all the requirements of the students, i.e. comprehensive coverage of General Studies topics and objective types questions articulated in a lucid language. This book not only covers the syllabus of Maharashtra Engineering Services in a holistic manner but is also useful for other competitive examinations. All the topics are given the emphasis they deserve so that mere reading of the book helps aspirants immensely.

Our team has made their best efforts to remove all possible errors of any kind. Nonetheless, we would highly appreciate and acknowledge if you find and share with us any printing and conceptual errors.

It is impossible to thank all the individuals who helped us, but we would like to sincerely thank all the authors, editors and reviewers for putting in their efforts to publish this book.

With Best Wishes

B. Singh

CMD, MADE EASY Group

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General Studies

Geography

with

*Special reference to
Maharashtra*



MAHARASHTRA

At A Glance

Maharashtra: At A Glance	
Date of formation	May 1, 1960
Capital	Mumbai and Nagpur(Winter)
Area	3,07,713 sq.km
Neighbouring States	Gujarat, Madhya Pradesh, Andhra Pradesh, Karnataka, Goa, Dadra and Nagar Haveli, Chhatisgarh
Sea	Arabian Sea
Present Governor	Bhagat Singh Koshyari
Chief Minister	Uddhav Thackeray
Chief Justice	Justice Pradeep Nandrajog
Chief Secretary	Ajay Mehta
Lokayukta	Justice M. L. Tahaliyani
Legislative Bodies	Bicameral Assembly (i.e.; Legislative Assembly and Legislative Council)
Assembly Seats	289 (including 1 nomination)
Legislative Council Seats	78
Lok Sabha Seats	48
Rajya Sabha Seats:	19
Main Political Parties	Nationalist Congress Party(NCP), Indian National Congress, Shiv Sena, BJP, CPI-M, Maharashtra Nav Nirman Sena, Peasants and Workers Party of India etc.
Chief Language	Marathi
Zero Mile Stone	The Geographical Centre of India is located in Nagpur.
Rivers	Godavari, Penganga, Bhima, Varna, Parvara, Mula



The Earth

Earth

We live on a beautiful planet called earth, along with a wide variety of plants, animals and other organisms. Our earth, however, is part of a vast universe. The universe is about 15 to 20 billion years old. The age of the earth is approximately 4 to 5 billion years. Our earth, with all its diversity along with other planets and their satellites, the sun, the moon, the many galaxies (huge groups of millions of stars) form the universe. Stars are huge balls of bright, hot glowing gases. The 'Sun' is also a star. It is the star nearest to earth – about 150 million kilometers away. A solar system consists of a star in the middle with a number of planets orbiting around it. The earth is a part of its solar system. It is one of the eight planets of the solar system that has the sun (a star) in the middle and the eight planets moving around it. Until recently solar system was believed to have nine planets. However, on the basis of the latest scientific assessment, Pluto, is no longer regarded as a planet of earth's solar system. Earth is the only planet known to sustain life.

Conditions necessary for sustaining life

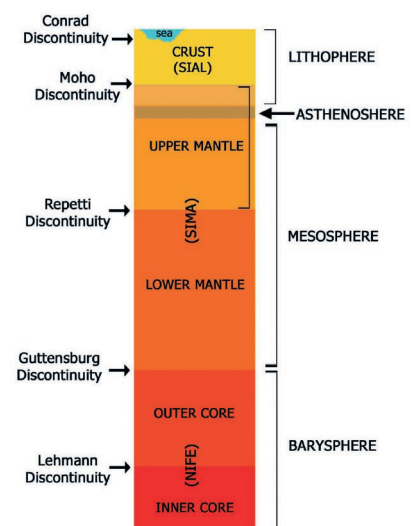
- **Presence of water:** During the evolution of the earth, water vapour in the primitive atmosphere condensed into liquid water. This gave rise to the formation of oceans, rivers and other fresh water bodies. Three-fourth of earth's surface is covered with water. Water is a universal solvent and life originated in water. Two thirds of a living organism consists of water and 90 percent of cell content is also water. Biochemical reactions in living organisms require an aqueous medium. Therefore, water is important for the survival of living organisms.
- **Atmosphere:** The earth is enveloped by a gaseous atmosphere that supports life. The earth's atmosphere consists of nitrogen (78%)

and oxygen (21%), small amounts of carbon dioxide, watervapour, ozone and rare gases like argon, neon etc. Oxygen from the atmosphere is used by the living organisms during respiration. Oxygen is necessary to oxidize food for liberating energy required for various activities in the living organisms. Green plants utilize carbon dioxide from the atmosphere during photosynthesis

- **Temperature:** The average temperature of the earth is 16°C. This is the most comfortable temperature for the living organisms to survive. Earth gets light from the sun, the star nearest to earth. It is the ultimate source of energy.
- **Buffering capacity of earth:** The most unique feature of the earth is its buffering action due to which a neutral pH (pH-7) is maintained in the soil and water bodies. The neutral pH is congenial for the survival and sustenance of living organisms.

Interior of the Earth

The configuration of the surface of the earth is largely a product of the processes operating in the interior of the earth. Exogenic as well as endogenic processes are constantly shaping the landscape. Structure of earth's interior is fundamentally divided into three layers – crust, mantle and core.



Crust	<ul style="list-style-type: none"> • It is the outermost solid part of the earth, normally about 8-40 kms thick. • It is brittle in nature. • Nearly 1% of the earth's volume and 0.5% of earth's mass are made of the crust. • The thickness of the crust under the oceanic and continental areas is different. Oceanic crust is thinner (about 5 kms) as compared to the continental crust (about 30 kms). • Major constituent elements of crust are Silica (Si) and Aluminium (Al) and thus, it is often termed as SIAL (Sometimes SIAL is used to refer Lithosphere, which is the region comprising the crust and uppermost solid mantle, also). • The mean density of the materials in the crust is 3 g/cm³. • The discontinuity between the hydrosphere and crust is termed as the Conrad Discontinuity.
Mantle	<ul style="list-style-type: none"> • The portion of the interior beyond the crust is called as the mantle. • The discontinuity between the crust and mantle is called as the Mohorovich Discontinuity or Moho discontinuity. • The mantle is about 2900 kms in thickness. • Nearly 84% of the earth's volume and 67% of the earth's mass is occupied by the mantle. • The major constituent elements of the mantle are Silicon and Magnesium and hence it is also termed as SIMA. • The density of the layer is higher than the crust and varies from 3.3 – 5.4 g/cm³. • The uppermost solid part of the mantle and the entire crust constitute the Lithosphere. • The asthenosphere (in between 80-200 km) is a highly viscous, mechanically weak and ductile, deforming region of the upper mantle which lies just below the lithosphere. • The asthenosphere is the main source of magma and it is the layer over which the lithospheric plates/ continental plates move (plate tectonics). • The discontinuity between the upper mantle and the lower mantle is known as Repetti Discontinuity. • The portion of the mantle which is just below the lithosphere and asthenosphere, but above the core is called as Mesosphere.
Core	<ul style="list-style-type: none"> • It is the innermost layer surrounding the earth's centre. • The core is separated from the mantle by Guttenberg's Discontinuity. • It is composed mainly of iron (Fe) and nickel (Ni) and hence it is also called as NIFE. • The core constitutes nearly 15% of earth's volume and 32.5% of earth's mass. • The core is the densest layer of the earth with its density ranges between 9.5-14.5 g/cm³. • The Core consists of two sub-layers: the inner core and the outer core. • The inner core is in solid state and the outer core is in the liquid state (or semi-liquid). • The discontinuity between the upper core and the lower core is called as Lehmann Discontinuity. • Barysphere is sometimes used to refer the core of the earth or sometimes the whole interior.

Latitudes & Longitudes

Latitudes and Longitudes are imaginary lines used to determine the location of a place on earth. The shape of the earth is 'Geoid'. And the location of a place on the earth can be mentioned in terms of latitudes and longitudes. Example: The location of Mumbai is 19.0760° N, 72.8777° E.

Latitudes	Longitudes
Latitude is the angular distance of a point on the earth's surface, measured in degrees from the center of the earth.	Longitude is an angular distance, measured in degrees along the equator east or west of the Prime (or First) Meridian.
As the earth is slightly flattened at the poles, the linear distance of a degree of latitude at the pole is a little longer than that at the equator. For example at the equator (0°) it is 68.704 miles, at 45° it is 69.054 miles and at the poles it is 69.407 miles. The average is taken as 69 miles (111 km).	On the globe longitude is shown as a series of semi-circles that run from pole to pole passing through the equator. Such lines are also called Unlike the equator which is centrally placed between the poles, any meridian could have been taken to begin the numbering of longitude. It was finally decided in 1884, by international agreement, to choose as the zero meridian the one which passes through the Royal Astronomical Observatory at Greenwich, near London. This is the Prime Meridian (0°) from which all other meridians radiate eastwards and westwards up to 180° .
Besides the equator (0°), the north pole (90° N) and the south pole (90° S), there are four important parallels of latitudes: <ul style="list-style-type: none"> • Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) in the northern hemisphere. • Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) in the southern hemisphere. • Arctic circle at $66\frac{1}{2}^{\circ}$ north of the equator. • Antarctic circle at $66\frac{1}{2}^{\circ}$ south of the equator. 	As the parallels of latitude become shorter poleward, so the meridians of longitude, which converge at the poles, enclose a narrower space. They have one very important function, they determine local time in relation to G.M.T. or Greenwich Mean Time, which is sometimes referred to as World Time.

Latitudinal Heat zones of the earth

- The mid-day sun is exactly overhead at least once a year on all latitudes in between the Tropic of Cancer and the Tropic of Capricorn. This area, therefore, receives the maximum heat and is called the torrid zone.
- The mid-day sun never shines overhead on any latitude beyond the Tropic of Cancer and the Tropic of Capricorn. The angle of the sun's rays goes on decreasing towards the poles. As such, the areas bounded by the Tropic of Cancer and the Arctic circle in the northern hemisphere, and the Tropic of Capricorn and the Antarctic circle in the southern hemisphere, have moderate temperatures. These are, therefore, called temperate zones.
- Areas lying between the Arctic circle and the north pole in the northern hemisphere and the Antarctic circle and the south pole in the southern hemisphere, are very cold. It is because here the sun does not raise much above the horizon. Therefore, its rays are always slanting. These are, therefore, called frigid zones.

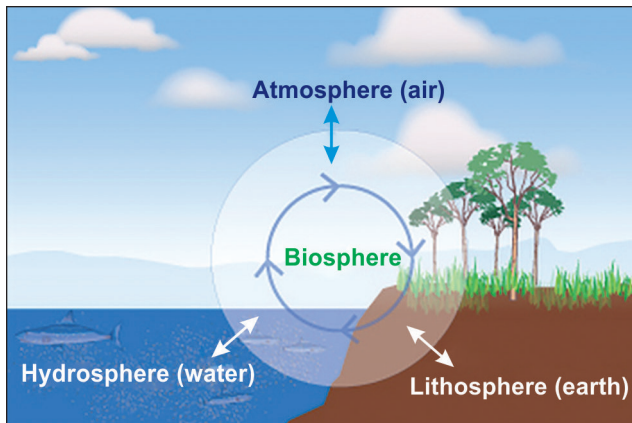


Spheres of the Earth

(Hydrosphere, Lithosphere, Atmosphere and Biosphere)

Sphere

Everything in Earth's system can be placed into one of four major subsystems: land, water, living things, or air. These four subsystems are called "spheres." Specifically, they are the "lithosphere" (land), "hydrosphere" (water), "biosphere" (living things), and "atmosphere" (air).



Lithosphere (Land)

The lithosphere is made up of all the hard and solid land mass on the earth's surface, the semi-solid rocks (molten materials) underneath the earth crust,

and the liquid rocks in the inner core of the earth. The surface of the lithosphere is uneven as it is characterized by various landform features. Some of the landforms include mountains like the Mount Fuji in Japan and Mount Vesuvius in Italy, deep valleys within the mountain ranges, huge plains like the ones in Texas and Brazil, extensive plateaus like Bolivian plateau in South America and the Colorado plateau of the United States, and hills like the black hills. The liquid, semi-solid, and solid land components of the lithosphere form layers that are chemically and physically different. This is why the lithosphere is further divided into sub-spheres namely the crust, the mantle, the outer core, and the inner core. The crust is made of loose soil and rocks. The mantle is made of dense rock made up of nickel and iron in the form of silicate rocks and its lower part is semi-solid (partially molten) rocks. The outer core is made up of liquid (purely molten) rock materials. The inner core is the centre of the earth which is purely made of very hot and liquid iron and nickel. The rock materials are divided into three primary categories based on how they are formed namely igneous rocks, sedimentary rocks, and metamorphic rocks.

Igneous Rocks

- Formed out of magma and lava and are known as primary rocks.
- If molten material is cooled slowly at great depths, mineral grains may be very large.
- Sudden cooling (at the surface) results in small and smooth grains.
- Granite, gabbro, pegmatite, basalt, etc. are some of the examples of igneous rocks.
- There are two types of igneous rocks: intrusive rocks (Granite) and extrusive rocks (Basalt-Deccan Traps).
- Having their origin under conditions of high temperatures, the igneous rocks are Acid igneous rocks, such as granite, are less dense and are lighter in colour than basic rocks.

<p>Sedimentary rocks</p>	<ul style="list-style-type: none"> • Formed due to deposition of layers of sediment usually along the water bodies over a long period of time. • Sediment is deposited layer by layer in form of strata hence also known as stratified rocks. • Process of turning sediments into hard rock layers by pressure is known as lithification. • Rocks may be fine grained or coarse, soft or hard & material forming them may be brought by streams, glaciers, winds or even animals. • May be derived from Igneous, Metamorphic or Sedimentary rocks. • Hence, Sedimentary rocks are most varied in formation of all rocks. • They are non-crystalline & often contains fossils of animals, plants & other microorganisms. • Depending upon the mode of formation, they are classified into mechanically formed - sandstone, conglomerate, limestone, shale, loess etc. • Organically formed - geyserite, chalk, limestone, coal etc. • Chemically formed - chert, limestone, halite, potash etc.
<p>Metamorphic rocks</p>	<ul style="list-style-type: none"> • The word metamorphic means 'change of form'. • Form under the action of pressure, volume and temperature (PVT) changes. • Metamorphism occurs when rocks are forced down to lower levels by tectonic processes or when molten magma rising through the crust comes in contact with the crustal rocks. • Metamorphism is a process by which already consolidated rocks undergo recrystallization and reorganization of materials within original rocks. • In the process of metamorphism in some rocks grains or minerals get arranged in layers or lines. Such an arrangement is called foliation or lineation. • Sometimes minerals or materials of different groups are arranged into alternating thin to thick layers. Such a structure in is called banding. • Some Examples of Metamorphism <ul style="list-style-type: none"> ◆ Granite Pressure Gneiss ◆ Clay, Shale Pressure Schist ◆ Sandstone Heat Quartzite ◆ Clay, Shale Heat Slate Heat Phyllite ◆ Coal Heat Anthracite, Graphite ◆ Limestone Heat Marble



India

India

The mainland of India extends from Kashmir in the north to Kanniyakumari in the south and Arunachal Pradesh in the east to Gujarat in the west.

- The southernmost point of the country is the Pygmalion Point or Indira Point is located at 6° 45' N latitude.
- North-south extent from Indira Col in Kashmir to Kanniyakumari is 3,214 km.
- East-west width from the Rann of Kachachh to Arunachal Pradesh is 2,933 km.
- With an area of 32,87,263 sq km, India is the seventh largest country of the world.
- India accounts for about 2.42 per cent of the total surface area of the world.
- The Tropic of Cancer passes through the middle of the country dividing it into two latitudinal halves.
- The area to the north of Tropic of Cancer is nearly twice the area which lies to the south of it.
- India has 15106.7 Km of land border running through 92 districts in 17 States and a coastline of 7516.6 Km [6100 km of mainland coastline + coastline of 1197 Indian islands] touching 13 States and Union Territories (UTs).
- Barring Madhya Pradesh, Chhattisgarh, Jharkhand, Delhi, Haryana and Telangana, all other States in the country have one or more international borders or a coastline and can be regarded as frontline States from the point of view of border management.
- India's longest border is with BANGLADESH while the shortest border is with Afghanistan.



Physical Divisions of India

- Himalayas
- Peninsular Plateau
- Indian Islands
- Indo-Gangetic Plain
- Coastal Plains



Himalayas

Series of several parallel or converging ranges.

- The ranges are separated by deep valleys creating a highly dissected topography [(of a plateau or upland) divided by a number of deep valleys].
- The southern slopes have steep gradients and northern slopes have comparatively gentler slopes.
- Most of the Himalayan ranges fall in India, Nepal and Bhutan. The northern slopes are partly situated in Tibet (trans-Himalayas) while the western extremity lies in Pakistan, Afghanistan and Central Asia.
- Himalayas between Tibet and Ganga Plain is a succession of three parallel ranges.

Trans Himalayas	<ul style="list-style-type: none"> • The Himalayan ranges immediately north of the Great Himalayan range. • Also called the Tibetan Himalaya because most of it lies in Tibet. • The Zaskar, the Ladakh, the Kailas and the Karakoram are the main ranges. • It stretches for a distance of about 1,000 km in east-west direction. • Average elevation is 3000 m above mean sea level. • The average width of this region is 40 km at the extremities and about 225 km in the central part. • The Nanga Parbat (8126 m) is an important range which is in The Zaskar Range. • North of the Zaskar Range and running parallel to it is the Ladakh Range. Only a few peaks of this range attain heights of over 6000 metres. • The Kailas Range (Gangdise in Chinese) in western Tibet is an offshoot of the Ladakh Range. The highest peak is Mount Kailas (6714 m). River Indus originates from the northern slopes of the Kailas range. • The northern most range of the Trans-Himalayan Ranges in India is the Great Karakoram Range also known as the Krishnagiri range. • Karakoram Range extends eastwards from the Pamir for about 800 km. It is a range with lofty peaks [elevation 5,500 m and above]. It is the abode of some of the greatest glaciers of the world outside the polar regions. • Some of the peaks are more than 8,000 metre above sea level. K2 (8,611 m) [Godwin Austen or Qogir] is the second highest peak in the world and the highest peak in the Indian Union. • The Ladakh Plateau lies to the north-east of the Karakoram Range. It has been dissected into a number of plains and mountains [Soda Plains, Aksai Chin, Lingzi Tang, Depsang Plains and Chang Chenmo]
Great Himalaya	<ul style="list-style-type: none"> • Also known as Inner Himalaya, Central Himalaya or Himadri. • Average elevation of 6,100 m above sea level and an average width of about 25 km. • It is mainly formed of the central crystallines (granites and gneisses) overlain by metamorphosed sediments [limestone]. {Rock System} • The folds in this range are asymmetrical with steep south slope and gentle north slope giving 'hog back (a long, steep hill or mountain ridge)' topography. • This mountain arc convexes to the south just like the other two. • Terminates abruptly at the syntaxial bends. One in the Nanga Parbat in north-west and the other in the NamchaBarwa in the north-east. • This mountain range boasts of the tallest peaks of the world, most of which remain under perpetual snow.

Middle or the Lesser Himalaya	<ul style="list-style-type: none"> • In between the Shiwaliks in the south and the Greater Himalayas in the north. • Runs almost parallel to both the ranges. • It is also called the Himachal or Lower Himalaya. • Lower Himalayan ranges are 60-80 km wide and about 2400 km in length. • Elevations vary from 3,500 to 4,500 m above sea level. • Many peaks are more than 5,050 m above sea level and are snow covered throughout the year. • Lower Himalayas have steep, bare southern slopes [steep slopes prevents soil formation] and more gentle, forest covered northern slopes. • In Uttarakhand, the Middle Himalayas are marked by the Mussoorie and the Nag Tibba ranges. • The MahabharatLekh, in southern Nepal is a continuation of the Mussoorie Range • East of the Kosi River, the SaptKosi, Sikkim, Bhutan, Miri, Abor and Mishmi hills represent the lower Himalayas. • The Middle Himalayan ranges are more friendly to human contact.
Shiwalik Range	<ul style="list-style-type: none"> • Also known as Outer Himalayas. • Located in between the Great Plains and Lesser Himalayas. • The altitude varies from 600 to 1500 metres. • Runs for a distance of 2,400 km from the Potwar Plateau to the Brahmaputra valley. • The southern slopes are steep while the northern slopes are gentle. • The width of the Shiwaliks varies from 50 km in Himachal Pradesh to less than 15 km in Arunachal Pradesh. • They are almost unbroken chain of low hills except for a gap of 80-90 km which is occupied by the valley of the Tista River and Raidak River. • Shiwalikrange from North-East India up to Nepal are covered with thick forests but the forest cover decreases towards west from Nepal (The quantum of rainfall decreases from east to west in Shiwaliks and Ganga Plains). • The southern slopes of Shiwalik range in Punjab and Himachal Pradesh are almost devoid of forest cover. These slopes are highly dissected by seasonal streams called Chos.

Purvanchal or Eastern Hills

- Eastern Hills or The Purvanchal are the southward extension of Himalayas running along the north-eastern edge of India.
- At the Dihang gorge, the Himalayas take a sudden southward bend and form a series of comparatively low hills which are collectively called as the Purvanchal.
- Purvanchal hills are convex to the west.
- They run along the India-Myanmar Border extending from Arunachal Pradesh in the north to Mizoram in the south.
- Patkai Bum hills are made up of strong sandstone; elevation varying from 2,000 m to 3,000 m; merges into Naga Hills where Saramati (3,826 m) is the highest peak.
- Patkai Bum and Naga Hills form the watershed between India and Myanmar.
- South of Naga Hills are the Manipur hills which are generally less than 2,500 metres in elevation.
- The Barail range separates Naga Hills from Manipur Hills.
- Further south the Barail Range swings to west into Jaintia, Khasi and Garo hills which are an eastward continuation of the Indian peninsular block. They are separated from the main block by Ganga and Brahmaputra rivers.
- South of the Manipur Hills are the Mizo Hills (previously known as the Lushai hills) which have an elevation of less than 1,500 metres. The highest point is the Blue Mountain (2,157 m) in the south.

Purvanchal-Eastern-Himalayas

