**Class XI- Fundamentals of Physical Geography**

The orgin and evolution of earth

1. Which theory of the earth’s origin is connected with Laplace and Immanuel Kant? What refinements did Otto Schmidt and Carl Weizascarsuggest?
2. What are the main elements of theory given by Chamberlain and Moulton?
3. What is another name for the Big Bang Theory? Who gave initial evidence of the same.
4. What are 2 key evidence of Big bang theory? (in the notes)
5. The Big Bang Theory postulates that the universe and galaxies are expanding. True or False?
6. What is the timeline of various events post Big Bang upto the formation galaxies and stars?
7. Explain the process of formation of galaxies, stars, and planets formed?
8. What are exoplanets? What is goldi lock zone (habitable zone around star)
9. What are dwarf planets?
10. What is the lifecycle of a star. Mention possible eventualities. [(Link)](https://www.schoolsobservatory.org/learn/astro/stars/cycle)
11. What is chadershekar limit? What size star leads to black hole? (notes)
12. What are pulsar and magnator? Which of these spin slower (notes)
13. Whats the difference between asteroid, comet, meteor, meteorite. Which one of them is also called shooting star?[(link)](https://byjus.com/physics/celestial-bodies/)
14. Why are inner planets rocky while outer planets are gaseous?
15. What is the difference between Terrestrial and Jovian planets? Name them.
16. What is Big Splat theory of formation of moon?What was its impact on temperature of earth?
17. What is light year and Astronomical Unit?
18. How was the layered structure of the earth developed? (barish hua, ocean bna, fir subsuming hua, continent bna
19. Describe the 3 key phases of evolution of the earth’s atmosphere. Composition of atmosphere in each phase
20. When did the life begin on earth? When did the process of photosynthesis begin? (Pre-cambrian- life in water), Palaeozoic (Life on land), Mesozoic (Dinasour), Cainozoic (Current)
21. Decrsibe the process of photosynthesis?
22. Arrange in order of increasing time? Epoch, Eon, Era, Period?
23. What are sunspots? What are 6 layers of sun and which one has sunspots? [(Link)](https://en.wikipedia.org/wiki/Sunspot)

The Interior of earth

1. List direct and indirect sources of information about earth’s interior? (3 each)
2. Where is the deepest Deep Dril located in world? How deep is it?
3. What is gravitational anamoly?
4. Define: focus, hypocentre, epicenter (with reference to earthquakes)
5. What are earthquakes? Their geological process and different waves? Impact? Explain with a diagram (Use diagram 3.1 and 3.2 on P-3/4) (P- se pressure- mane longitudinal)
6. How are earthquakes/energy generated?
7. In which layer of earth does natural earthquakes take place?
8. What are the 2 different kinds of earthquake waves? What is the main difference between them?
9. What are the 2 different kinds of body waves? What are the two main differences between them?
10. Of the three kinds of waves, which ones are a) the most destructive b) first to reach?
11. List the mechanism of propagation of the 3 kinds of waves.
12. Which one creates crests and troughs in the material?
13. Which one creates density differences in the material?
14. What is a ‘shadow zone’?Between P and S waves, which ones have a larger shadow zone?What is the extent on degrees of their respective shadow zones?
15. Why do earthquake waves develop shadow zones?
16. Describe the most commonly used scales for measuring earthquakes. (3 types) (P4+5)
17. What are the 5 types of earthquakes? Some after-effects?
18. What is the mean thickness of: oceanic crust? Continental crust?
19. What is the type of rock most commonly found in oceanic crust?
20. Discuss the 5 layers of the earth. Give thickness and state (physical, chemical) of layers
21. Does the lithosphere consist only of the earth’s crust?
22. Define *‘Moho’s&Gutenberg Discontinuity’* and nife layer in the above context
23. Which layer of earth is most usual source of volcanic magma? Difference b/w lava, magma
24. What is the difference between shield volcanoes, composite volcanoes, calderas, and flood-basalt provinces? Give example of each type of volcano
25. Which of the folloing characteristics are more in magma coming from deep inside v/s upper crust

* Viscosity, Acidicity, Temperature, Density, Explosivity

1. India’s Deccan Trap is an example of which one of the above?
2. What does explosiveness of a caldera indicate?
3. Which of the above develops into a cinder cone?
4. True or false. MOR stretches through all oceanic basins
5. What are plutonic rocks? What is their other counterpart?
6. List and describe 6 different forms of intrusive landforms formed by volcanic eruptions.<Laco, lapo, phaco) (Use diagram 3.5)
7. Which of these are denunded granite hills in Karnataka

Distribution of continents and Oceans

1. What % of earth’s surface is covered by continents?
2. Which scientist’s name is associated with the theory of continental drift?
3. According to this theory, what were the ancient landmass and the mega-ocean called?
4. List 4 evidences cited~~(specific examples)~~in support of the continental drift theory. Issues with theory Scientist?
5. What are *Tillite and Placer deposits?*
6. According to Wegener, what were the two forces that caused continental drift?
7. Name two prominent post-drift studies.Who gave these theories
8. What are the three broad divisions of the ocean floor? Key landforms on each of these landforms
9. What are *abyssal plains?*
10. Where on the map would you find the ‘*ring of fire’?Explain its formation (Fig 4.2 P-4)*
11. Explain the concept of *sea floor spreading,* and give three pieces of evidence in its favor. (Check notes ) by Henry Hess 1961!!
12. Discuss the plate tectonic theory? Mention key plates?
13. Discuss the different types of boundaries and its effects (landorms et al) (Notes)
14. Which have shallow earthquakes focus – MOR, Alpine/Himalyas and Pacific rim?
15. What are the shortcomings of continental drift and sea floor spreading theory? (Read from notes)
16. How is a tectonic plate classified as oceanic or continental?How does their depths vary? Which layer of earth does it comprise of?
17. According to the theory of plate tectonics, how many major tectonic plates exist on the earth’s lithosphere? Name them.
18. Where are these minor plates located:- Nazca, Caroline, Juan De Fuca, Cocos, Fiji, Philippines, Arabic
19. How is the theory of continental drift different from the theory of plate tectonics?
20. Does the theory of plate tectonics discredit the existence of an ancient, connected landmass known as Pangaea?
21. What are the 3 different kinds of boundaries of tectonic plates?
22. What kind of boundary are the Himalayas located on?
23. What is the driving force behind movement of tectonic plates?
24. What are the two main sources of the earth’s internal heat?
25. What is the name of the ancient sea that separated India from the Asian landmass before the two converged?
26. Dicuss the 4 key events related to Indian subcontinenet movement?
27. What are the various boundaries of Indian-Australian plate? Mention the divergent boundaries? (Repeat)

Various landform formation (from notes)(TBD)

1. Give names of various islands and relevant trench in Pacific ocean? (Name 8). What’s their formation process. Specifiy their geographical location (Repeat)
2. Which trench is related to Andaman & Nicobar Islands?
3. How are islands formed that are not accompanied with trenches? Give 4 names and geographic location.<Galapagos>
4. What is mantle plume. Discuss the asscoaited landforms?
5. Is the east African rift valley also a consequence of Mantle plume.
6. How were Emperor Sea mounts formed?
7. Explain the formation of Japanese arc of islands i/c various trenches and plates [(Link)](https://www.pmfias.com/ocean-ocean-convergence-island-arc-japanese-philippine-indonesian-caribbean-island-formation/#in-spite-of-extensive-volcanism-there-is-no-island-formation-along-the-divergent-boundary-mid-oceanic-ridge)
8. Why are there no islands in the atlantic ocean if through there is excessive volcanism? [(Link)](https://www.pmfias.com/ocean-ocean-convergence-island-arc-japanese-philippine-indonesian-caribbean-island-formation/#in-spite-of-extensive-volcanism-there-is-no-island-formation-along-the-divergent-boundary-mid-oceanic-ridge)
9. How many times have fold mountains formed in history of earth? Give classification for recent 3 period? 4 Examples of mountains and geographical location for each period ?
10. Give an example of Block mountain and relevant valley river on France, Germany border? Is it a fault or fold mountains? What are horsts and garben in this context?
11. Is Aravali a fold and or fault mountain? What about Satpura, Vindhyachala? (A-Fold, S/V- Block) (notes) (various types of folds)
12. Does fault and fold mountains involve only diverging forces?
13. Give details of faults that happen during earthquare wrt to inter-plate interaction (S-C/T but D-S)
14. Discuss the earthquakes in Himalayas? (45mm/year)
15. Does all above faults happen in Himalayas?
16. What are the reasons for intra-plate earthquakes?
17. Does Tsunami wave height increase or deacrease as it approaches near the shore?
18. Does water receding happen only before the Tsunamis?
19. Give 2 important Tsunami Zone for India?
20. What are 3 Tsunami warning in the world?

Rocks and minerals

1. List the top five elements found in the earth’s crust (by weight %).
2. What is mineral? Are minerals only combination of 2 or more elements?
3. What is the basic source of all minerals?
4. What are 6 major minerals and give their composition in earth’s crust (given in NCERT)
5. Which mineral is present in graphite, meteorite, basaltic rocks?
6. Which mineral is used in ceramics/glass, radio/radar, asbestos, electrical and jewellery industry
7. Do rocks have definite composition of minerals?
8. Which are the two most common minerals found in rocks?
9. What is the technical term for the science of rocks (*not* geology)
10. Discuss the process of formation of igneous, sedimentary, metamorphic rocks.
11. Can the magma solidified inside the earth crust be classified as igneous rock?
12. Which rocks have characterisitcs of layered structure and fossil trapping?
13. How are the above further classified based on process of formation?
14. Which rocks are formed by lithification, metamorphosis, solidification? (Diagram Fig 5.1, Page 5)
15. What is dynamic metamorphism?
16. What are the two types of thermal metamorphism?
17. What is *foliation?*By which other name is it known?
18. What is *banding?*
19. Give exmaples mentioned in NCERT for all 3 types of rocks

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| --- | --- |
| **Rock type** | **Examples** |
| Igneous rocks | Granite, Gabbro,Pegmatite, Basalt, Volcanic Breccia, Tuff |
| Sedimentary rocks | Mech- Sandstone, Conglomerate, Limestone, Shale, Loess, Mustone  Organically (C/Ca)- Geyserite, Chalk, Limestone, Coal  Chemically- Chert, limestone, halite, potash |
| Metamorphic rocks | Shale-> Slate-> Phylite-> Schist  Sandstone-> Quatizite  Limestone/Dolamite-> Marble  Coal-> Graphite/Diamond |

Geomorphic processes

1. What is gradation? Which geomorphic process supports it?
2. What is the basic source of all exogenic forces that act on the earth’s surface? (Page 45)
3. Why do exogenic forces fail to ever even out all the relief features on the earth’s surface?
4. What is a geomorphic process?
5. Differentiate between geomorphic process and agent?
6. What are the 4 main forces that drive endogenic forces? (Page 46)<rotation>
7. What is *diastrophism? What are the 4 processes responsible for it?*
8. 3 Key difference between orogency and epeirogeny?
9. Which umbrella term is used for describing all exogenic geomorphic processes? What are the 3 types and their driving forces?
10. What is weathering? Is weathering an in-situ or ex-situ process?
11. What are the three main types and sub-types of weathering processes?
12. What is exfoliation? What are 2 differences between exfoliated domes and tors?
13. What is Frost thawing and wedging?
14. What is a regolith and process of enrichment and its importance in countries economy? (Page 51)
15. Are mass movements an example of erosion? Explain (Page 52)
16. Give some examples of slow and fast mass movements?
17. What is *solifluction?*What latitudes is this most common in and why?
18. What is Talus in geography?
19. Give examples of 3 fast movements which are characteristic of humid regions? Order of speed of flow
20. What is slumping?
21. Give 3 reasons why the Himalayas are prone to debris avalanches and landslides.
22. Why do landslides happen in Western Ghats even though Himalayan factors are absent?
23. Is weathering a pre-requisite for mass movement and erosion?
24. What is the key difference between weathering and erosion? (movement)
25. How is Kinetic energy related to process of erosion? Explain how glaciers are so effective in erosion even though they barely move?
26. Mention different agents of soil erosion? Work of which agent is not controlled by climate?
27. What is soil?What are people who study soil called?
28. What is the process of soil formation called? Is weathering a pre-requisiite? Detail the next steps
29. What is weathering mantle?
30. List the five basic factors that affect soil formation? Which of these factors are passive and active?
31. What is elluviation, illuviation and desilication?

LANDFORMS AND THEIR EVOLUTION

1. What is geomorphology?
2. What is the difference between landscape and landform
3. Discuss the key landforms associated with various stages of river?
4. What are rills, gullies, monadnocks and peneplains in context of river erosion
5. Waterfalls and rapids are associated with which stage of a river?
6. What is the difference between a *gorge* and a *canyon*?
7. What are potholes and plungeholes?
8. What is incised meanders? What is role of river rejuvenation in its formation?
9. What are oxbolakes?
10. What are river terraces? Difference between paired and unpaired ones? Is it an erosional/depositional landform?
11. What are *floodplains, natural levees*?
12. Where are coarser sediments depositied near the banks or bluff lines?
13. How are alluvial cones/fans formed? Is it linked to tributaries or distributaries?
14. Discuss the formation of lagoons
15. How are river deltas different from alluvial cones? (2 points)
16. What are *point bars?* Where are these likely to be located?
17. Give 3 reasons for formation of meanders.
18. What are the cut-off and slip-off banks in a meandering river?
19. What are *braided channels?*
20. In which kinds of rocks does groundwater make landforms? Name two.
21. What are *karst* regions? Discuss key landforms (lapie/ridges, pavement, swallow hole, sink hole, valley sink)
22. Explain: Swallow holes, sinkhole, doline, uvalas, lapies.
23. 3 depositional landforms formed due to underground water? How are they formed?
24. Discuss key glacial lanforms (Fjords, eskers, drumlins)
25. What are piedmont glaciers?
26. Which two rivers (their glacier source) in the Himalayas join to make the Ganga? Where do they join each other?
27. What are: *cirques, tarn lakes, horns, serrated ridges/arêtes?*
28. Give example of Horns in Himalyan and Alps range?
29. What are *U-shaped valleys, hanging valeys, fjords/fiords?*
30. What are 3 differences between river and glacial valleys?
31. What are*glacial till, morianes(ground, lateral, terminal, medial)?*
32. *What are outwash plains, eskers, drumlins?*
33. What is the difference between ice sheet, ice cap, ice streams and ice shelves [(Link)](http://ete.cet.edu/gcc/?/icecaps_icesheets)
34. What type of coasts are emerging and submerging coasts (Rocky/ Sedimentary)
35. What is wave-cut platform (cliff/ terrace) and wave-built terrace?
36. What is *headland* and *bay? (*[*watch this*](https://www.youtube.com/watch?v=gd0aHjHtE20)*)*
37. What landforms are formed by erosion of sea caves by waves?[(link)](https://www.youtube.com/watch?v=EyJCW5182K4)<Stack and stump>
38. What are various depositional landforms by waves? Why is conservation of these landforms critical?<Spit>
39. Which coast of India has dominant erosional/ depositional features?
40. Do *shingle* beaches contain large pebbles or small?
41. Differentiate between deflation, abrasion, attrition? (removal by wind,rocks hit by small particles, particles rub together and get smaller)
42. What are *pediments* and *pediplains?*
43. What is parallel retreat of slopes?
44. *What are inselbergs?*
45. What are *playas?*
46. What are *deflation hollows, blow outs?*
47. What is difference between *creep, saltation and suspension? (i/c size of material)<Remember the order>*
48. What is the difference between *barchans, seifs,* and*parabolic, traverse and longitudnal dunes?*
49. Various desert landforms (erosion- pedeplains, Isenberg, playas, blow outs; deposit- dunes- parabolic, barchans, seifs)

Composition and Structure of Atmosphere

1. Discuss the layers (i/c importance), composition, temperature and pressure rates of atmosphere.
2. 99% of the total mass of the atmosphere extends upto what height from the earth’s surface?
3. How many gases constitute 99.99% of atmosphere. Mention their names and % composition?
4. How does the ozone layer help us?
5. What is greenhouse gas?
6. Which layer of the atmosphere contains the ozone layer?
7. What is the extent in terms of height of oxygen, CO2 and water vapours in atmosphere?
8. How does concentration of water vapour vary between equator to pole? (no max at sub-tropic)
9. Are water vapours also a GHG? What is max. concentration of water vapours in atmosphere
10. In which latitudes is a higher concentration of dust particles found, and why? (Page 77)
11. How do dust particles help in cloud formation?
12. At which latitudes is height of troposphere maximum and minimum? Mention the height? Why?
13. Why is the tropopause called that?
14. What is the rate of decrease of temperature in troposphere? Max and Min temp at trapapause
15. In which layer(s) of the atmosphere does the temperature start increasing with height?
16. Does the temperature at traupapause change above equator or poles?No
17. At what heights do the various layers of atmosphere exist? (thermosphere height)
18. Which layer is critical for radio wave communication? What are its 2 names?

Solar radiation, Heat Balance and Temperature

1. What is the primary reason behind differences in atmospheric pressures at different places?
2. What are the technical names for positions of the earth when it is closet to/ furthest away from the sun? What are these dates when these events occur?
3. What are the five major factors that determine the insolation of a place?<Transaparency>
4. What is the angle made by the earth’s axis with the plane of its orbit around the sun?
5. Why do higher latitudes of the earth receive lesser insolation?
6. What are the reasons behind the red color exhibited by the setting and rising sun? (Page 80)
7. Why does the equator receive comparatively lesser insolation as compared to the tropics?
8. Where in sub-tropics is insolation maximum? Which region has higher insolation- continent/ oceans?
9. What is *conduction, convection,advection?*
10. How is advection important in the context of India and middle latitude?
11. What is meant by the *albedo of the earth?*
12. Describe the heat balance of the earth. (Page 81) (17,48)
13. Which latitudes have surplus of energy and which have deficit of heat?Why do these heat excess and heat deficit places not get hot/cold over time?
14. What are the five major factors that determine the temperature of a place?
15. What is meant by the *normal lapse rate?*
16. What are isotherms?
17. What is the relationship between isotherms and the earth’s latitudes?
18. In which hemisphere does this relationship hold roughly true?
19. In January and July, describe the typical position of isotherms in the northern and southern hemispheres.
20. In which month and which hemisphere is the effect of bending more pronounced?
21. What is thermal equator? How does it position vary in month of June and January? (Page 84)
22. Describe: Temperature Inversion, give two examples.<Surface inversion, Air drainage>
23. In which time the polar region will normally see temperature inversion?
24. What is the relationship b/w latitudes &daytime at (0, 23.5, 66.5, 90)N/S during SS, WS, Equinox?
25. Longest, shortest and equal daytime is observed for (0, 23.5, 66.5, 90) N/S at which position during earth’s revolution? (Google)
26. Dates/Months between which there’s day and night at poles.
27. In India, why is day temperature maximum in May and not during the summer solstice in June?
28. What is *plank’s law* and *specific heat*?
29. Discuss earth’s heat budget?
30. Describe the formation of seasons and associated day lenghts

ATMOSPHERIC CIRCULATION AND WEATHER SYSTEMS

1. What is difference between wind and draft?
2. What is atomospheric pressure? In what units is atmospheric pressure measured? What is atmospheric pressure at sea level?
3. What is the primary cause for movement of air from one place on the earth to the other?
4. Although pressure decreases rapidly with height in the lower atmosphere, why do we not experience vertical winds? What is this rate of decrease?
5. What are the lines connecting places that have equal atmospheric pressures called?
6. List 4 forces that affect horizontal movement of air close to the earth’s surface.
7. How does the pressure gradient force differ due to differences in the distances between isobars?
8. What is the Coriolis force? How does it relate to latitudes?
9. What is the relationship between Coriolis force and the Pressure Gradient force?
10. Why are tropical cyclones not formed near the equator?
11. How are geostrophic winds created?
12. What is the extent of frinctional forces in the troposphere?
13. What is the wind circulation around a low-pressure zone called? Around a high-pressure zone?
14. List the 5 things that determine the general pattern of circulation.
15. Discuss the creation of various pressure belts and cells in atomosphere?<Head to head the cells>
16. Discuss how these belts weaken or strenghten in summer/winter?
17. Name the islandic names of pressure highs and lows created in Atlantic and Pacific ocean.
18. What are doldrums, horse latitudes?
19. Discuss the various types of global seasonal winds? (notes)
20. Give a few examples of local winds aross the globe? (notes)-
21. What are *Jet streams and Rospy waves?* Why are they created? (notes)
22. What are 3types of jetstreams? (their latitude, direction, ~~speed, altitude)~~ (notes)
23. Discuss the phenomenon of land and sea breeze creation
24. What is *katabatic wind?*
25. What is an air mass? What are 5 airmasses and sources around the globe?
26. What are the 4 fronts created on interaction of airmasses? Discuss their impact. (vertical cloud in cold front)
27. What type of clouds are formed at warm and cold front?
28. What are extra-tropical cyclones? At what latitudes do they form?
29. Describe the three stages of an extra-tropical cyclone.
30. Draw the cross-section of an extra-tropical cyclone.
31. What are the 5 favourable conditions for formation of tropical cyclones?
32. Explain the anatomy of a tropical cyclone.
33. What are the names of tropical cyclones in the Indian Ocean, Atlantic Ocean, Western Pacific, and Western Australia?
34. Explain: Tropical cyclones that cross 20 degrees N latitude generally recurve and are more destructive.
35. What are 2 atmospheric conditions at the eye of the tropical cyclone
36. What is the wind and travel speed, diameter of circulating system and storm of tropical cyclone?
37. List 5 differences between tropical and extra-tropical cyclones
38. What is *land fall* and *storm surge?*
39. Why do a lot of strong cyclones are built in western pacific oceans? (notes)
40. Why are BoB cyclones more destructive than Arabian sea cyclones? (notes)
41. What are the 7 categories of cyclones as defined by IMD? (read from notes)
42. ~~Total number of cyclones/ and severe cyclones in India? (read from notes)~~
43. How many states/UT are affected by cyclones in India? (read from notes)
44. What are thunderstorms?
45. What are tornadoes and water sprouts?
46. In which latitudes are you likely to find tornadoes, and why?
47. Explain the phenomenon of cloud bursts? (notes)
48. In the northern hemisphere, in which directions do tropical and extra-tropical cyclones spin?
49. In the southern hemisphere, in which directions do tropical and extra-tropical cyclones spin?
50. The direction of wind around a low pressure in the northern hemisphere is: clockwise, anti-clockwise, perpendicular to isobars, or parallel to the isobars?
51. Give an example of upper atmospheric wind flow parallel to isobars
52. What is ITCZ? Discuss its movement round the year?
53. What are 2 places where it is confined to NH and why?

Water in the atmosphere

1. What is the range of moisture in atmosphere.
2. Define *absolute humidity*, *relative humidity, specific humidity (g/kg). Mention units of each*
3. What is *dew point?*
4. Why is evaporation greater when the movement of air is greater? (Page 98)
5. What is sublimation?
6. How does condensation rate change with decrease in volume, temp and increase in moisture?
7. What is difference between dew and frost? Which forms when dew point is higher than freezing point? What are ideal atmospheric conditions for its formation
8. What is the difference between fog and mist? Which leads to lower visibility and why?
9. What are the four different types of clouds?
10. How does precipitation happen after condensation?(Page 100)
11. What are the 4 types of precipation? Describe how are they formed?
12. What are 3 types of rainfall based on their origin?
13. Between 35 and 40 degrees North and South of the equator, the rain is heavier on the eastern coasts of continents, and vice versa for 45 and 65 degrees N and S. Why?
14. ~~Discuss the salient features of the world distribution of precipitation?~~

Water (Oceans)

1. Describe the vaious processes of hydrological cycle.
2. What are top 5 reservoirs of water on earth.
3. What are the four major divisions of the oceanic floor?Average depth below sea level
4. Why are fossil fuels rather commonly in the oceans just off the shores of the continents?
5. Give examples of wide and narrow conitental shelves.
6. Give an example where oceanic ridge rise above the sea level?
7. What are *seamounts, guyots, submarine canyons* and *atolls*? Give few examples.
8. What are the 4 major factors that influence the temperature of oceans
9. In which hemisphere are oceans, on average, likely to be hotter? (Page 115)
10. What cause *longitudinal*variations in ocean temperature? (Page 115)
11. Why do enclosed seas in the low latitudes record relatively higher temperatures than the open sea, and enclosed seas in high latitudes have lower temperature than the open sea?
12. What is the *thermocline?*What % water lies below it?
13. What is the average temperature of the surface water of the oceans at the equator? (Page 116)
14. Does highest average temperature exist exactly at equator? If not, where does it exist?
15. Which hempishere has higher average temperature and why?
16. How is salinity of water defined?
17. What is *halocline?* (Page 118)
18. Describe three zones of ocean water based on temperature? Does these layers exist in all latitudes in all season?
19. What are 5 key factors that influence the salinity of oceans
20. What is the upper limit of salinity to demarcate brackish water? (Page 116)
21. Which lakes exhibits the highest level of salinity?
22. What is range of salnity in open oceans? ~~How does salinity vary with latitudes in pacific ocean and Atlantic ocean? (Just remember NCERT)~~
23. Which latitude observes maximum salinity generally and why? (see sticky notes on left page 117)
24. Mention top 3 dissolved salts in sea water (in gm/kg) in decreasing order?
25. Although the North Sea is located at a rather high altitude, why does it record a high level of salinity?
26. Which of the Meditteranian and Black sea has higher salinity and why?
27. Among Bay of Bengal and the Arabian Sea, which one exhibits higher salinity and why?
28. What is impact of freezing, evaoporation and influx of fresh water to salinity of water?

Movement of Ocean water

1. Classify the following into horizontal and vertical motions: ocean currents, tides, and waves.
2. What is the different between a wave, tide and current?
3. What causes waves to form and travel?
4. Describe the motion of water inside a wave with a diagram.
5. When do waves break?
6. What does the steep and steady/slow wave tells about the age of the wave?
7. In what unit is currentspeed usually measured? What is maximum velocity of ocean currents? Is it higher on surface or in depth?
8. What is the difference between tides and surges? (Page 121)
9. Aside from the gravitation force created by the pull of the sun and the moon, what is the other major cause of tides?
10. How many times a day do tides usually occur? At what rough time interval? Mention 3 tides types based on their frequency.
11. Where are mixed tides found? Where are highest tides observed
12. Where is tidal bulge higher: at continental shelves or mid-oceanic islands? Why? [(Link)](https://www.quora.com/Why-are-tidal-bulges-greater-on-continental-shelves-than-in-mid-oceans)
13. Does High Tides occur at the same time every day? Explain
14. What is meant by *perigee and epigee*
15. What are spring tides and neap tides? When do they occur? Which of all the tides the highest?
16. What is ebb? What is the opposite phenomenon called?!!!
17. List 4 major forces that affect ocean currents. (Page 123)
18. Why does water tend to flow *away*from the equator? (Page 123- CHECK)
19. What are gyres?
20. How can the ocean current be classified based on the depth of flow in ocean
21. Describe the phenomenon of oceanic currents in an ocean between 2 land masses. Mention all key global oceanic currents<Benguela, Aughlas>
22. Why don’t Indian ocean water currents follow the pattern of Atlantic and Pacific Ocean currents?
23. What are the two major factors influencing the direction of ocean currents?
24. What is impact of ocean currents on west and east cost in tropical/sub-tropical v/s middle/higher latitude. On which coast they would have severing v/s moderating effect?
25. Which types of current when meet lead to a suitable conditions for fishing?

Ecology and Biodiversity

1. Define *ecology.*(Page 128)
2. True or false: Habitat denotes the physical characteristics that constitute the general environment of an organism.
3. What are the two broad types of ecosystems?
4. What are *biomes?*
5. What are four major kinds of biomes?
6. What are the two major types of aquatic ecosystems?
7. What are the two types of food chains? (Page 129)
8. What are *biogeochemical cycles?*
9. What is the carbon cycle?
10. What are *exotic species?* (Page 137)
11. What are the 3 classification of IUCN?
12. What are the different levels of biodiversity?

**Class XI: Book 02- India: Physical Environment**

India- Location

1. What are the latitudes and longitudes that cover the extremities of Indian mainland and Indian polity?
2. How many nautical miles does the territorial limit of India extend towards the sea?
3. Which extent of India is longer in distance: horizontal or vertical? Why is there a difference even though the longitudinal and latitudinal difference is similar in both directions?
4. Name the states through which India’s standard meridian passes. Which place is used for IST?
5. Name the states through which Tropic of Cancer passes from?
6. What is the difference between a Gulf and a Strait?
7. How many countries does India share a land border with? Rank them in order of the length of the frontier.
8. What is highest and lowest point in India? Which states and districts?[(Link)](https://en.wikipedia.org/wiki/Geography_of_India)
9. What is largest lake (freshwater, brackish, saltwater, artificial, highest, deepest) in India? [(Link)](http://www.quickgs.com/list-of-largest-lakes-of-india/)
10. Which country has the maximum number of time zones? [(Link)](https://en.wikipedia.org/wiki/List_of_time_zones_by_country)

National boundaries-

* Haryana doesn’t share order with UK- but with UP, Punjab, Himachal, Rajasthan, Delhi)
* CG shares border with MH, Telangana, Orissa, Jharkhand, AP, MP, UP
* UP shares maximum inter-state borders,
* Meghalaya doesn’t share boundary with WB
* Orissa and MP doesn’t share boundary with Telangana

International boundaries

* WB shares border with Nepal/Bhutan/Bangladeshm,
* Sikkim with China, Nepal, Bhutan;
* Arunachal with Mynmar, China, Bhutan
* Bangaldesh goes right upto Mynmar
* Countries with 5 boundaries- Nepal, Bangladesh, China; 4- Pak, Bhutan; 1- Afghanistan

Capitals

* In Line-
  + Delhi, Bhopal, Bangalore;
  + Gandhinagar, Bhopal, Ranchi;
  + Kolkata, Indore, Ahmedabad
  + Mumbai-Bhubaneswar (closer than Nagpur)
* Top to bottom
  + Hyderabad, Panji, Bangalore, Chennai, PortBlair, Karavati, Trivendram
  + Delhi, Jaipur, Lucknow,Patna
  + Shimla, Chd, Dehradun, Delhi
  + Gangtok-Itanagar, Dispur, Kohima-Shillong, Imphal, Aizawl-Agartala
  + Yanam, Mahe-Puducherry, Kariakal
* Left to right
  + Chd, Delhi, Shimla, Dehradun
  + Gangtok, Agartala, Dispur-Shillong, Aizawl, Itanagar, Imphal, Kohima
  + Bangalore, Hyderabad, Nagpur, Chennai, Lucknow, Raipur

Structure and Physiography

1. What are 3 geographical and 6 physiographical divisions of India?
2. Explain the 4 stages of formation of Himalayas based on timeperiod, average height, type of crust, peaks?<Dhaulagiri, kamet position>
3. What is the average length, width of Himalayas
4. What are the 5 type of categories of Himalyas based on their location in India?
5. List important ranges, passes, duns, lakes, deserts, tribesin above 5 regions
6. Which Himalayan regions are associated with Karevas and Molassis Basin? Define them
7. Why does Jhelum show meandering behavior in high altitudes?
8. Why did British introduce tea plantations in Sikkim and Darjelling regions? (3 key reasons)
9. What is Jhumming? Which part of India is it practicsed?
10. Which side of Himalayan ranges are more steep-Northwards or Southwards?
11. Give 3 reasons as to why the rivers flowing east in India into the Bay of Bengal form deltas. [(Link)](https://www.quora.com/Why-do-Western-Ghats-dont-have-River-Deltas-whereas-Eastern-Ghats-have)
12. Which major rivers drain the northern plains of India? (Page 15)
13. Into how many major zones can the northern plains be divided? Give a few characteristics of it
14. Which of Bhangar and khadar is older?
15. What are 3 regions of Gangetic plain? Mention the type of alluvial deposits in each region (notes)
16. What are doabs? Mention names of doabs related to Indus river system?
17. Comment- Peninsular plalteau is a featureless topography.<hummocky hills, Quartize dykes, spurs, ravines, block mountains, caves> (Topography is natural and artificial physical features of an area)
18. Which side is the general elevation of plateau (east to west or otherwise)
19. Name the tectonically active fault in the plateau region?
20. What are the 3 types of peninsular plateus? Give geographical extent of each type<Deccan>
21. What are the western ghats locally known as in the following regions: Maharashtra, Karnataka, Kerala? Mention 4 major passes present between the hills
22. Mention the important peaks/ranges of Eastern ghats. Mention the respective states?
23. Which is the highest and second highest peak of the Southern India, and where is it located?
24. Where do the eastern and western ghats meet each other?
25. Most of the tributaries of Yamuna river originate from which mountain ranges?
26. Which tributary(ies) of Chambal orginate from Aravali hills
27. Which states act as water divide between Indus and Ganga river system?
28. Mention the major hills in Meghalaya plateau?
29. Which fault separates Rajmahal hills from Meghalaya plateau? What the theory behindits creation?
30. Is the Thar Desert a part of the peninsular plateau? (Page 18)
31. What is expected state of Thar desert during Mesozoic era? What’s the evidence?
32. Name the ephemeral river of Thar desert?
33. How is the slope of Thar desert oriented?
34. Why is the western coast of India more suited to ports and harbors?
35. What are Kayals? Why is Punnamada Kayal famous for?
36. Where is Chilka, Pulicat, Wembannad lake situated? Which of these are fresh water lake?
37. What are the various names of Western coast and eastern coast across state
38. Which of the west and south coast is emergent and submergent?
39. Give the lat-long of A&N and Lakshdweep? Which is more vertically and horizontally spread?
40. Mention the important peaks and islands of A&N and Lakshdweep inslands?
41. What is significance of eight, night, ten, eleven degree channel in A&N/ Lakshdweep? (P-29 Atlas)
42. Which is the only active volcano in India? Where is it located?
43. Which between the two main groups of islands in India is built of coral deposits?
44. What is type of vegetation in A&N islands?
45. Which is the largest island in Lakshadweep group? What type of beaches does it have
46. Mention the location and significance of following islands:[(Link)](https://iasmania.com/islands-in-india/)
    1. ~~Mazuli, New Moore, Sagar, Wheeler, Hope, Sriharikota, Salsaette, Wellington, Katchatheevu~~

Drainage System

1. What is channel, drainage, drainage system, drainage pattern?
2. Differntiate between a) dendritic and trellisb) centripetal and radial
3. What are ‘catchment areas’ and ‘drainage basins’? (Page 20)
4. What is the difference between ‘watersheds’ and ‘basins’?
5. Which river is known as ‘the sorrow of Bihar’ and was Known as ‘sorrow of Bengal’? Why?(Page 24)
6. Which river feeds the canal system of the Bhakra Nangal Project? (Page 25)
7. How are rivers classified based on direction of flow, size of drainage basin, origin?
8. Which mountain ranges/plateaus cause the water divide in India?
9. How many rivers fall in each category of rivers based on size of drainage.
10. What is a *‘river regime’?*
11. *What is thalweg?*
12. List 6 key differences between Himalayan and Peninsular rivers? (place of origin, nature of flow, type of drainage, nature of river, catchment area, age of river)
13. Mention the 4 key river inter-linking plan proposed in India? Which is the responsible organization
14. Discuss its pros and cons? (2 names, area change)
15. What are the 5 prayags in the Ganga river system
16. How has Himalayan drainage system evolved over years (Miocene, Pleistocene, evidence)
17. What are three key geographical events that have shaped current peninsular rivers flow
18. List the various rivers along the west and east coasts of India, and mention the states that they serve?

|  |  |  |
| --- | --- | --- |
| River system | | Major tributaries Highlighted regions are tributary’s basin |
| Ganga | | **Formation**: Bhagirathi and Alaknanada (at DevPrayag) and called Ganga   * **Bhagirathi-** Rises at Gangotri (Uttarkashi, UK) * **Alaknanda-** Rises at Satopanth Glacier, Badrinath-> Dhauli/Vishnu Ganga (Vishnu Prayag)-> Nanadakini (Nanda Prayag), Pindaar (Karna Prayag), Madakini/Kali Ganga (Rudra Prayag) (Rises at Kedarnath- Only right bank tributary   Passes through UK, UP, Bihar, WB -> Breaks into Bhagirathi/ Hughali and Padma at Farakka Barrage->Hughli joined by Damodar->Sagar Island  **Left bank tributaries:**  Ramganga (Kanauj, Najorabad), Gomati (Lucknow, not on Ganga bank), Ghaghra (Chhapra), Gandak(Sonpur/Patna), Kosi, Mahananda  **Right bank:** Yamuna (Allahabad), Son (Arrah)- b/w ghgra/gandak |
| Yamuna | Rises at Yamunotri Glaciers (Banderpunch range), river feeds Agra Canal  **Left Bank –** Hindan, Rind, Senger, Varuna  **Right Bank-** Chambal, Sind, Betwa, Ken |
| Chambal | Rises near Mhow (Malwa Plateau) MP-> Kota (Raj) (Gandhisagar dam), Banas is a tributary (rises in Arravali) |
| Ghaghra | Rises at Mapchachungo glacier (Nepal)-> Mixes with Tila, Seti, Beri, Kali/Saryu/Chauk (Rises in Milam glacier, Nepal) |
| Gandak | Kaligandak + Trishulganga, flows b/w Dhaulagiri and Mt. Everest-> Enters at Champaran |
| Kosi | Rises in Mt. Everest as Arun river-> Joined by Son Kosi (west/right bank), Tamur Kosi (East/left bank) now called Sapta Kosi |
| Ramganga | Rises near Gairsain, Garhwal hills |
| Mahananda | Rises in Darjelling hills, WB |
| Son | Rises in Amarkantak hills |
| Damodar | Barakar is a tributary (IISCO plant water) |
| Indus | | **Tibet:** Rises near Bhokar Chu, Kailash range  **India**: Flows b/w Zaskar and Ladhak range only in J&K-> Zaskar-> Shyok -> Gilgit-> Krishen Ganga, Other tributaries (Hunza, Nubra, Gasting, Dras)  **Pakistan:** Enters near Chilas (Dardistan)-> Kabul river (Attock), Other (Khurram, Tochi, Viboa, Gomal, Sangar), Panjnad (Mithankot)  **Left bank tributaries:**  Zaskar,Krishen Ganga, Panjnad  **Right bank:** Shyok, Gilgit, Kabul, Khurram, Tochi, Viboa, Sangar |
| Panjnad | **Jhelum-** Rises Verinag (Pir-Panjal)->Dal, Wuller lake, meets Chenab at Jhang   * **Chenab**- Chandra+Bhaga (Tandi, Keylong, HP)- Left Bank * **Ravi**- Rohtang Pass (b/w Pir Panjal & Dhauladhar), Chamba valley, Joined by (Budhil and Tundahen) Meets Jhelum at Sarai- Sidhu (Left bank)   **Sutlej-** Rises Rakas Lake (Kailash) as Langchen Khambab->Rupar, Shipki La (HP)-> Punjab, Meets Beas at Harike (Punjab) -> Meets Jhelum at Uch Sharif   * **Beas**- Beas Kund (Rohtang pas), Kullu Valley, Dhaoladhar range– Right Bank |
| Brahmputra | | **Tibet**:Rises in Chemayungdung Glacier, Kailash range, Mansarovar lake, Tsang Po. -> Joined by Rango Tsang Po-> enters India through Namch Barwa near Sadia (Arunachal)- Known as Dihang/Siag    **India:**Mixes with Dibang/Sikang and Lohit in Arunachal-> Brahmputra -> Mixes with Burhi Dihing, Dhansari, Subansiri (Tibet, Arunanchal, Assam), Kameng (Arunachal, Assam), Manas (Bhutan, Assam), Sankosh (Bhutan, Assam)  **Bangladesh:**-> Enters Bangladesh at Dhubri (W.Bengal)-> Joined by Tista (Sikkim, W. Bengal, Bangladesh)->called Yamuna-> Joined by Padma (Ganga distributary)->called Meghana(Barak, its tributary- Mani/Mizo)-> flows into BoB  **Left bank tributaries:**  Dibang/ Sikang, Lohit, Burhi Dihing, Dhansari  **Right bank:** Rango TsangPo**,** Subansiri, Kameng, Manas, Sankosh, Tista |
| Tapi | | Satpura, MP (Betul district); Maharashtra, Gujarat |
| Narmada | | Amarkantak- Maikalhills; flows in a rift valley between Vindhyas and Satpuras, forms Dhuandhar waterfall near Jabalpur; **Sardar Sarovar Dam (MP, Maharasthra, Gujarat)** |
| Mahi | | Rises in MP, flows through Rajasthan and **Gujarat** to drain into Arabian sea |
| Luni | | Starts as Saraswati and Sabarmati (in Aravali) Rajasthan meet in Govindgarh |
| Small west flowing rivers | | **Gujarat**: Shetrunji (Amreli), Bhadra (Rajkot), Dha(n)dhar (Panchmahal)  **Maharashtra:** Vaitarna (Nashik), Kalindi (Belgaum, falls in Karwar bay)  **Karnataka:** Shravasti (Shimoga) Jog Falls  **Goa:** Mandovi, Juari  **Kerala:** Bharathapuza/Ponnai (Annamalai hills)- second longest but largest, Periyar, Pamba (falls-Vemobanad lake) |
| Godavari | | Rises in Trimbakeshwar, Nasik (WG), known as Dakshin Ganga; runs through Maharashtra, MP, Chhattisgarh, Orrissa, Telangana and Andhra Pradesh  **Main Tributaries:** Penganga, Indravati, Pranhita, Manjra (only right bank)- PIMP |
| Krishna | | Rises in Mahabaleshwar (WG); runs through Maharashtra, Karnataka, Telangana and Andhra Pradesh  **Main Tributaries:** Koyna, Tungabhadra (only right bank tributary), Bhima and Musi (Hyderabad) |
| Kaveri | | Rises in Brahmagiri hills, Karnataka (Kogadu district); runs through Karnataka,Keralaand Tamil Nadu  **Main Tributaries:** Kabini, Amravati, Bhavani (KABha kashi) |
| Mahanadi | | Rises in Raipur district Chhaitigarh run through Odisha to discharge into BoB. Some river basin extends into MP also |
| Barak | | Tributary of Meghna, Flows in Manipur, Mizoram |
| Chidwin | | Eastern part of Manipur and tributary of Irrawady (Maynmar) |
| Small East flowing rivers | | Subarnrekha (Jharkhand->W. Bengal->Odisha-> BoB), K(h)arkai (Tributary of Subarnrekha),  Baitarni (Odisha) , Brahmani (Odisha)  Penner(Karnataka, AP),  Palar (Karnataka, AP, Tamil Nadu), (PalarParlour)ghr k basement h  Adyar & Cooum (Chennai, TN), Vaigai (Madurai), |

Climate

1. List two major effects of the Himalayas on the climate of India.
2. Discuss three weather mechanism of summer and winter in India. (Latitudes, Name of Jetstreams)
3. During winter, when the prevailing night temperature increases, what does it indicate? (Page 36)
4. At which time of the year tropical cyclones are these likely to hit India?
5. Between which latitudes do the easterly jet streams confine themselves over India? (Page 37)
6. Which wind system is responsible for the ‘burst’ of monsoon over India? (Page 38)
7. What is the *monsoon trough?* (Page 40)<Equatorial trough>
8. What is break in the monsoon? What are the two major reasons for *break* in the monsoon?
9. Explain: monsoon rains show a declining trend from west to east over the west coast of India, and from the southeast towards the northwest over the North Indian Plain and the northern part of the peninsula.
10. What causes El-Nino and what are 3 key effects on El-Nino?
11. What causes La-Nino and what are 3 key effects on La-Nino?
12. What is southern oscillation and related Index (SOI)? How does SOI vary in normal, El-Nino and La-Nino years
13. What are walker circulations and how do they change in case of normal and El-Nino year?
14. What is Indian Ocean diapole? How does rainfall in west India affected if IOD>0 and IOD<0
15. Explain the pattern of winter rainfall in India. (CHECK- Page 42)
16. List some names of local pre-monsoon storms in India (Assam, Coffee)
17. Which of the following statements is true: during summer months, a) the temperature in India decreases from north to south, or (b) isobars parallel with coast
18. At which latitude are you likely to find the ITCZ during July? (Page 45)
19. In which direction does the *loo* blow? (westerly or easterly?)
20. Explain the two branches of the southwest monsoon in India. (Page 47)
21. Why does Tamil Nadu remain dry during the southwest monsoon?
22. Describe: *October Heat.*
23. Explain: the weather in retreating monsoon (around October and November) is dry in north India but is associated with rain in the eastern part of the peninsula. (Page 49)
24. When does Monsoon hit and retreat from various parts of India?(Page 37 sticky)
25. What are the 4 categories of regions based on Annual rainfall in India? <KAM states which are in rain shadow, Canchar valley, Manipur>
26. What range of annual rainfall doesCachar valley receive? Where is it located?
27. Name the 6 Indian names for seasons, and Indian names for the months that they are associated with.
28. ~~Which parts of India fall under the following type of climate: Amw, As, Aw, Bwsw, Bwhw, Cwg, Dfc, E. (Page 53- DO PROPERLY)~~
29. How many distinct seasons are found in India as per the IMD? Name them. (Page 56)
30. What is Isohyte? (line of same rainfall)
31. Which crops are benefitted by temperate cyclones in winter in North-West India?
32. Which Peninsular mountain range receives snowfall?

Natural vegetation

1. Name the 5 major groups into which Indian forests can be divided based on precipitation and terrain.
2. Mention the key trees and regions where the above forests are found

|  |  |  |
| --- | --- | --- |
| Type of tree | Rainfall conditions | Tree spicies |
| Evergreen | >200 cm precipitation  Mean annual temp >22C | Rosewood, Ebony, Aini, Mahogany |
| Semi- evergreen | Slighty less rainy v/s evergreen | White cellar, hollock, kail (Who ho Kali!) |
| Moist deciduous | 100-200 cm | Teak, Sal, Shisham, hurra, mahua, Amla, Semul, Kusum, sandalwood (THe MAS(4)K) |
| Dry deciduous | 70-100 cm | Tendu, Amaltas, Bel, Khair, Axlewood (Tabka) |
| Tropical Thorny | <50 cm | Babool, Ber, Wild date Palm, Khair, Neem, Khejri, Palas, Tussocky grass (BP(2) high h K(2)Nhn Gya) |
| Montane | Mountaineous regions | **Foothills-** Decidious  *OC wrote a mail to CPWD, saying P.S. BJP vilated my FRs*  **1000-2000-** (wet temperate)- Oak, Chestnuts (Evergreen)  **1500-1750-** Chinar, Pines- Chir Pine, Walnut, Deodar, *(CPWD)*  **2225-3048**- Blue Pine and Spruce  **3000-4000-** Silver Firns, Rhododendrons, Birch, Jonipers, Pines *FR vilated by BJP*  **>4000 m** – Tundra (Mosses, Lichens)  **Sholas- Temperate/Nilgiri-** Magnolia, Laurel, Wattle, Cinchona (My Life With Cinchhona) |
| Littoral/Swamp | Wetland areas | 8 key wetland areas |

1. Which is the most common type of forests in India? (Page 59)
2. Name two plants that are common in tundra vegetation.
3. What are temperate forests called in the Nilgiri hills? (Page 60)
4. What is the title, importance of Ramsar convention? Name the oldest and recent Ramsar sites of India
5. Where do we find thick cover of Mangrove forests in India?
6. What % of India’s area does the National Forest Policy aim to bring under forest cover? Current area?
7. What are key aims of National forest policy?
8. What is ‘social forestry’?
9. What is ‘farm forestry’?
10. What are the two main aims of the Wildlife Act of 1972?
11. Which organization runs the Man and Biosphere programme?
12. Define: *Biosphere Reserve.*
13. How many BRs exist in India, How many are included in the World Network of BRs? Name them all.
14. Mention any hills or WLS associated with Nilgiri, Cold desert, Seshachalam?
15. ~~Key species animals found in Nilgiri, Nanda devi, Sundarbans, Gulf of MunnarBioreserve?~~

Soil

1. What is soil profile, horizons, bed rock?
2. What was urvara and usara in ancient times?
3. Under which ministry does Soil survey of India established? Any other body under ICAR?
4. Which is the most common soil type in India?
5. Discuss the variation of Khadar and Bhangar from upper to lower ganga plains? What is general colour of the soil?
6. Which characteristic of black soil helps crops sustain even during dry seasons?
7. What gives colour to red and yellow soils?
8. Heavy rainfall leads to Red/yellow or Laterite soils?
9. Which type of soil is good for cashewnuts and brick making?
10. What is the difference between sheet and gully erosion? (Page 73)
11. Why does excessive irrigation make arable soil saline?
12. What is integrated land use planning? (Page 74)
13. ‘Regur soil’ is another name for what kind of soil?
14. What do farmers add to the soil when it turns saline? (Page 72)
15. What is badland topography? Which river basin has it in prominence?
16. What are macro and micro nutrients in soil? [(Link)](https://www.youtube.com/watch?v=PI1u_UCyqmI)Pass the Microphone, CuZnCleMn is coming in FeB for MoNi

|  |  |  |  |
| --- | --- | --- | --- |
| **Soil** | **Texture** | **Characterisitcs** | **States** |
| Alluvial | Sandy to Clayey | Rich in K, Deficient- P  Rich is Krorepati  Deficient is Poor- Aleley! | **Indus- Ganga-Brahmputra plains**, small channel in Rajasthan, Gujarat, **Deltaic E. Coast** |
| Black | Clayey | Rich- Fe,Al,Ca, Mg (FeAl, CaMgbakt)- Muh Kala kradita  Def- N, P, Humus  NoPe He’s deficiently Black/Red! | **Deccan Plateau**- Gujarat, MP, Maharashtra, KN, Telangana, AP, Tamil Nadu |
| Red/Yellow | Loamy | (Crystalline igneous rocks)  Rich in- Iron (Iron Man suit has rich red colours)!  Def- N, P, Humus  Nope he’s definetly red/ black  Porous and friable  Neutral to acidic | **Low rainfall regions-** (Rain shadow, Arunachal)  Interior of east and west coast to MP, Chhatisgarh, Odisha, Soutern Ganga plains,  Also in North eastern states  **Periyar and Salem district of TN** |
| Laterite | Clayey | Rich in- Iron, K  Hey Rich- Is k Lat long toh batao  Def- N, P,Ca, Humus  NoPe!He’s definitely Late! Will Cancel the table.  (heavy leaching) | **Heavy rainfall and temperature:-**  Karnataka, Kerala, (other western coast states also?)AP, TN, MP  Hills of Odisha, Assam  West Coast+East Coast+MP/Assam |
| Arid | Sandy | Normal amount - P  Def- N, Humus  Arey- Defintely its Not Him!  High PH, quite productive (?) | Western Rajasthan |
| Saline (Ursus) | Sandy to loamy | Rich in : K, Mg, Na  Sale Ka MiNe; itna *Rich* h fir bhi Car Nhn h tere paas!  Def in- N, Ca  Poor in drainage, infertile | Sunderbands, Kutchh |
| Peaty |  | High Humus- Alkeline  **Water longer and partially decomposed humus** but less oxygen hence speed of decomposition is slow | Bihar, UK, WestBengal, Orrissa, TN  **High rainfall and humidity** |
| Mountain | Coarse to Silty |  | Mountain regions |

*Just remember the states of soils*

Natural Hazards and Disasters

1. What is a disaster?
2. What is the difference between a natural hazard and disaster (X)
3. Where is Ghost town of Chernobyl located? What led to it becoming a ghost town? (X)
4. What was traditional approach to disaster management? What is the *Yoakahama Strategy?*
5. What is Sendai framework? <BBB>Which UN body is coordinating its implementation? This body replaced which body and when?
6. What is the Disaster Management cycle?
7. What are the four broad categories of natural disasters?How are storm surges, avalanches, tropical cyclone classified? (Page 79)
8. Although the Indian peninsular block is a fairly stable geological entity, what is the cause of some devastating earthquakes in Gujarat and Maharashtra? (Page 81)
9. How many zones has India been divided into basis earthquake vulnerability? Which are very high and high vulnerability zones? Who has prepared these vulnerability zones?
10. Write few preparedeness techniqunes for earthquake? (X)
11. Explain: a ship at seais not much affected by a Tsunami, but the same Tsunami can cause massive damage at the coast.
12. Which latitudes are tropical cyclones found between? Why?
13. Why are tropical cyclones not found between 0-5 degrees latitudes?
14. In case of Bay of Bengal, why do cyclones develop most numerously during the months of October and November?
15. Why do tropical cyclones make landfall on India’s east coast, and not on the west coast?
16. What is flooding of a river? Which states are highly prone to flooding and highest prone state?
17. What are key reasons of flooding in a region? (X)
18. Why are low rainfall areas such as Punjab, Haryana and Rajasthan are experiencing flash floods?
19. What are causes of flash floods in coastal and mountaneous regions?
20. Which is the largest riverine island in the world? Which river is it situated in? Which state is it located in?
21. What are some mitigation strategies for floods and droughts? (X)
22. What are the 4 types of droughts? (Page 89)
23. Describe the Disaster Management Bill of 2005.[(Link)](https://www.gktoday.in/gk/disaster-management-act-2005-and-disaster-management-framework-in-india/)

***Additional questions from this book:***

1. Where are the following hills/ peaks located?

|  |  |  |  |
| --- | --- | --- | --- |
| **Hill** | **State** | **Hill** | **State** |
| Nallamalla | Andhra Pradesh | Veliconda | Andhra Pradesh |
| Javadi | Tamil Nadu | Palkonda | Andhra Pradesh |
| Mahendragiri | Orissa (highest peak of EGs is here) | Aravalis | Gujarat, Rajasthan, Haryana, Delhi |
| Vindhyas | Gujarat, MP, UP, Bihar | Satpuras | Gujarat-Maharashtra border, MP, Chhattisgarh |
| Kangtu | Arunachal Pradesh | Namcha Barwa | Arunachal Pradesh |
| Diphu pass | Arunachal Pradesh | Bomdi La | Arunachal Pradesh |
| Lushai | Mizoram | Pataki Bum | Arunachal Pradesh |
| Rajmahal hills | Jharkhand | Cardamom hills | Western Ghats (Kerala, SW Tamil Nadu) |
| Anaimalai hills | Kerala | Maikal range | Chhattisgarh (part of Satpura) |
| Mahadeo hills | MP (part of Satpura) | Anaimudi | WG; Kerala |
| Dodabeta | WG, Tamil Nadu | Kaimur hills | MP, Bihar |
| Saddle, Diavolo, Koyob, Thuiller | Andamans  (Thuiller in Nicobar) | Potwar plateau | Delhi Ridge |

1. What is a ‘scarp’? (Page 9)
2. What is ‘Baltoro’? (Page 11)
3. Name the only district in India through which the Indus river flows. (page 25)
4. Which is the largest tributary of the Indus? (Page 25)

**Class XII, Part 1: Fundamentals of Human Geography**

Population, Human Development, Human Settlements

1. What are top 10 most populous contries in world? What % of world population do they have?[(Link)](https://www.census.gov/popclock/print.php?component=counter)
2. What is Birth rate, death rate, natural population growth rate, actual population growth rate? What are these numbers for India? (X)
3. True or False. Human population increased more than ten times in the past 500 hundred years and has grown by 5 times in the past 100 years. (Page 13) (10x- 500 yrs, 4x- 100 yrs)
4. What are the 3 stages of demographic transition
5. True or false. Does high sex ratio in a region indicate that these regions have better women status
6. How does age sex pyramind look for growing, constant and declining population?
7. How is literacy defined in India?
8. Which age groups defined as working population?
9. List the 3 components of the HDI, and mention how they’re measured. (Page 27)
10. What are the 4 pillars of human development (ESPE) and 4 methods of human development?
11. Which economists defined the Human Development for the first time?
12. What are the factors influencing the location of industries? (8)
13. Assess these factors relevance for iron and steel and cotton industries? (X)
14. How is a market defined?
15. What are footloose industries? Give a few examples?
16. How can small scale industries be differentiated from cottage industries?
17. Discuss the global distribution of cotton and iron and steel industries.(X)
18. What are *quarternary* and *quinary* services? (Page 61)
19. What is the difference between KPOs and BPOs?

Primary activities

|  |  |  |
| --- | --- | --- |
| **Primary activities** | **Features** | **Regions (X)** |
| Gathering | * Subsistence- no surplus * Low yield | **High latitude-** Northern Canada, Northern Eurasia, Southern Chile  **Equatorial regions-** Amazon basin, Tropical Africa, Interior of SEA |
| Nomadic herding | * Move from place to another based on pasture and water. * Depends on livestock for most requirements (food, clothing etc.) * Animals vary as per location * **Mountainous regions- Transhumance** | **Deserts-** North Africa upto Central Asia (Gabi Desert Magnolia, China)  Kalahari- Namib  **Tundra regions** of Eurasia |
| Comm. animal rearing | * Large areas/ranches * Specialized activity, mostly one animal * Organized on scientific lines * High capital and labor intensity | USA, Australia, New Zealand, Uruguay and Argentina |
| Primary subsistence agriculture | * Slash and burn agriculture * Excessive loss of forest cover * Loss of soil fertility | **Tribal communities-** Africa (Bushman), Central and South America (Milpa), SEA (Ladang) India (Jhumming) |
| Intensive agriculture | * Small land holdings; high population; high land yield, * Low tech and high family labor- Low labour productivity, * Manual manure is used | Densely populated **monsoonal South Asia-** India, China, Korea, Japan, Indonesia  Rice- High rainfall (near coasts)  Other crops- Lower rainfall (far from coast) |
| Plantation agriculture | * Large estates for plantation * Capital and tech intensive * Cheap labour for good economy * Good transportation and management * Single crop specialization | British-   * **India/Srilanka-** Tea gardens * **Malaysia**- Rubber * **West Indies**- Sugarcane/Banana   Dutch- **Indonesia**- Sugarcane-  French- **West Africa**- Cocoa/Coffee-  Spanish/Americans- **Philippines**-Coconut/ Sugarcane |
| Extensive Commercial | * Semi-arid lands with irrigation facility * Large land holding- low yield * Highly mechanized- high labor productivity | Temperate grasslands across the world (Steppe, Prairie, Pampas, Velds, Downs, Canterbury) |
| Mixed Farming | * Moderate land holding * Inter rotation of crops for fertility * Mixed with Animal Husbandry * Highly tech &specialization oriented * Highly capital intensive | Developed countries:  Western Europe, Eastern N. America, Parts of Eurasia, temperate regions in SH |
| Dairy farming | * Specialized activity, mostly one animal * Organized on scientific lines * High capital and labor intensity | W. Europe, Canada, S. East Australia, New Zealand |
| Mediterranean agriculture | Viticulture, citrus fruits, Olives and figs | Mediterranean |
| Horticulture | * Fruits, Vegetable, Flowers * Small size of land * Only for urban markets * Good transportation connectivity (called Truck farming if trucks used- only for vegetables!) | N-W Europe, N-E America, Mediterranean |
| Cooperative farming | Pooling of resources for efficient farming | Denmark is the leader. Other Scandinavian countries also practice & Italy , Belgium |
| Collective farming | Pooled social resources (land, labour)  Payment by state based on work done | Russia/Socialist countries (Kholoz) |

Important Highways (X)

|  |  |
| --- | --- |
| **Highway Name** | **Connects** |
| Autobahns | Federal controlled highways in Germany |
| Trans-Canadian | Vancouver (British Columbia) to St. John’s City (Newfoundland) (St. Lawrence Gulf) |
| Alaskan | Edmonton (Canada) to Anchorage (Alaska) |
| Pan American | Preudo Bay (Canada), USA-> Mexico-> Central America-> Columbia-> Ecuador-> Peru-> Chile-> Argentina (Bruno Aires, Ushuaia) |
| Trans-continental Stuart | Northwest to Southeast- Darwin, Tenant Creek, Alice Spring, Melbourne |
| Moscow-Vladivostok | Tran Siberian |
| African highways | Algiers (Algeria) to Conakry (Guinea) and Cairo (Egypt) to Cape Town (S. Africa) |
| NH 44 India | Shortest route - (Srinagar to Kanyakumari (J&K, Punjab, Haryana, Delhi, UP, MP, Maharashtra, Telangana, AP, Karnataka, TN)- Longest highway of India |

Important Railway lines (X)

Some factoids:

1. Russia’s 90% transport network is through railways- **Crosses Ural (Ob and Yenisei rivers)**
2. Argentina and Brazil account for 40% of S. American railways
3. 25% of Australian railways is only in South Wales
4. Africa has only 40K km railways (equal to Australian total length), ~50% in South Africa
5. **Oceans around continents**
   1. **Russia-** Caspian Sea(S), Sea of Okhotsk (E)
   2. **Canada-** Pacific (W), Beaufort sea (NW), Baffin Bay (N), Hudson Bay (NE), Labrador Sea (E), Atlantic (SE)
   3. **Australia-** Indian Ocean (W) Timor Sea (N), Coral Sea (NE), Pacific (E), Tasman Sea (SE), Antarctic/Southern Ocean (S)
6. Rivers: Seine river (Paris)

|  |  |
| --- | --- |
| **Sea routes** | **Connects** |
| North Atlantic | Big Trunk route (1/4th of world’s trade), London (UK), Hamburg (Germany), Battle Harbor (Canada), New York (USA) |
| Mediterranean- Indian Ocean | **Africa**- Egypt- Suez Canal (Said Port to Suez Port), Yemen- Aden, Kenya- Mombasa, South Africa- Durban  **Asia:** Pakistan- Karachi, India- Mumbai, Kolkata Srilanka- Colombo, Singapore  **Australia:** Perth, Fremantle |
| Cape of Good Hope | **S.Africa**- Cape Town, **Brazil**- Belem, Rio De Janerio, **Uruguay-** Montevideo |
| North Pacific | **Canda:**Vancouver, **USA:**Seattle, Portland, San Francisco, Los Angeles  **Asia:** Yokohama, Kobe, Shanghai, Hong Kong, Manila, and Singapore |
| South Pacific | Western Europe and North America with Australia (Sydney, Melbourne) New Zealand (Auckland) and the scattered Pacific islands via the **Panama Canal** (Panama, Colon),  **Island Port:** Honolulu islands  **S. American Port:** Chile- Valparaiso |

|  |  |
| --- | --- |
| **Inland waterways** | **Connects** |
| Rhine river | Rotterdam( Netherlands), Belgium, Germany, France, Basel- Switzerland (5 countries) |
| Danube river | 10 countries (Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldova and Ukraine) |
| Volga river | **drains into the Caspian Sea,** Volga-Moscow Canal connects it with the  Moscow region and the Volga-Don Canal with **the Black Sea**. |
| Great Lakes- St. Lawrence | **Great Lakes of North America -Superior, Huron, Erie and Ontario are connected by Soo Canal (superior to huron) and Welland Canal (Erie to Ontario)**  Important ports- Duluth, Buffalo, Navigation upto Montreal |
| Mississippi | Mississippi-Ohio waterway connects the interior part of U.S.A. with the Gulf of Mexico in the south. |

**Class XII, Part 2: India- People and Economy**

Population, Migrtation, Human Development, Human Settlements

1. When was first population census conducted in India? It is under which ministry?
2. Name the Indian states (UT) that are:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicator** | **Source** | **National Avg.** | **Max State** | **Min state** | **Max UT** | **Min UT** |
| Area | Census | 3.28 Mn | Rajasthan | Goa | A&N | Lakshdweep\* |
| Population | Census | 1.2 Bn | UP | Sikkim | Delhi | Lakshdweep\* |
| Pop. density | Census | 382 | Bihar, WB | Arunachal\* | Delhi^ | A&N |
| TFR | NITI Aayog | 2.3 | Bihar | TN/WB |  |  |
| Urban Pop. | Census | 31% | Goa | HP, Bihar\* | Delhi^ | DNH |
| Internal Migration | Census | NA | Maharashtra | UP  Bihar | Delhi |  |
| Poverty | NSSO | 22% | Chhatisgarh\* | Goa | DNH | A&N^ |
| Literacy | Census | 74% | Kerala^ | Bihar\* | Lakshdweep | DNH |
| Female literacy | Census | 65% | Kerala^ | Rajasthan\* | Lakshdweep | DNH |
| HDI | HDR 2011, Planning Commission |  | Kerala |  | Delhi |  |
| Sex ratio | Census | 943 | Kerala^ (+1000) | Haryana | Pondicherry  (+1000) | DnD\* |

1. Top 10 cities of India in order of population? [(Link)](https://www.worldatlas.com/articles/the-10-largest-cities-in-india.html)(Bottom 3) and Top 2
2. What % of India’s population is rural?
3. What is physiological density and agricultural density? (Page 5)
4. What are 4 phases of population growth in India
5. How is youth defined by National Youth policy?
6. How many scheduled languages in India? Highest spoken and least spoken? (Page 9)
7. Four largest religions in India based on population?
8. Which state/UT has hunduism as a minority religion? [(Link)](https://en.wikipedia.org/wiki/Hinduism_in_India) (4 NE (MeNaMiAr, 1 island, 2 u know!)
9. ~~What is India’s workforce participation~~ and the relationship between work participation rate and the level of economic development of a region?
10. What is difference between inmigration, outmigration, immigration, emigration?
11. What are 2 types of migration measured in India? It was introduced by which Census
12. True or False. Women are majority migrants in intra-state migrations? Why so?
13. Which are 3 countries India receives maximum immigrants from?
14. Which Urban Aglomerate receives higher in-migration. Delhi, Mumbai, Kolkata, Chennai? Why so?
15. List down a few push and pull factors of migration?
16. What are economic, environmental, social consequences of migration
17. What are the various factors used to define a refugee under UNHCR? [(Link)](https://en.wikipedia.org/wiki/Convention_Relating_to_the_Status_of_Refugees#Noncompliance)
18. How are urban areas classified as per Census 1991?
19. What are Urban Agglomeration?
20. What is a metropolitan and megacity? How many such UA are there in India? (53, 8)

[Census 2011 trends](https://www.civilsdaily.com/census-2011-the-basics-and-summary-of-important-findings/)*(slower pop. Growth, higer literacy, shrinking gender/urban-rural literacy gap, improving sex ratio, declining child sex ratio, region-hindu(<),muslim(>))*

* **India’s population grew by 17.7% during 2001-11, against 21.5% in previous decade.**
* Literacy rate in India in 2011 has increased by 8 per cent to 73% in comparison to 64.8% in 2001
* The gap between literacy rate in urban and rural areas is steadily declining in every census.
* Gender gap in literacy rate is steadily declining in every census
* Sex ratio of population in the country in 2011 stands at **940** which is 10% more than 933 in last census
* Sex ratio of rural India is better than urban
* There has been a decline of 8 per cent in the sex ratio of 0-6 age group. In 2011, the child sex ratio (0-6) stands at**919** in comparison to 927 in 2001
* Population of hindus is declining, muslim population is increasing- other religions havestable population

Land resources and Agriculture

1. Which organization(s) maps the geographical and reporting area in India? Which ministry?
2. Which is the oldest scientific organization of government of India?
3. Which are the 9 categories of land use? Discuss the trends and reasons for the same. Which has the highest increase rate
4. What are Common Property Resources? Who owns them and have the right to use its resources
5. How is Cropping Intensity defined? What is India’s current Cropping Intensity? It is calculated as part of which Census with what frequency?
6. What is total cultivable land?
7. List 6 kharif, 5 rabi crops grown in north Indian states. (Page 44)
8. List 5 crops grown in south Indian states almost all year round.
9. In which kind of irrigation is water/unit requirement is higher: productive or protective?
10. What % of India’s total cropped area is accounted for by food crops?
11. What are *rai, toria, and taramira* examples of? (Page 49)
12. What is the land-man ratio in India? What’s the world average? (Page 53)
13. What is the difference between black and green tea leaves?
14. What are *robusta* and *liberica?*
15. Which two countries did India take the HYV seeds from during green revolution?
16. The first phase of green revolution was limited to which states and why?
17. Non spread to Eastern India – Zamindari, Rice, Poverty. In later stages, it did make some strides.

***Three distinct agricultural seasons in India:***

**Kharif (July- October)**

* Mnemonics- (C MSG RAM with MS. SUNita)
* Crops- Cotton, Millets (Jawar, Bajra, Ragi), Soyabean, Groundnut, Rice, Arhar (tur/ pigeon pea), Maize, with Mung, Sunflower, Sesamum,Urad,Nigerseed (oilseed)

**Rabi (November-March):**

* Mnemonics- WBC LO toh Mustard aur Safflower ka juice piyo
* Crops- Wheat, Barley, Chickpea/Gram (चना), Lentil/Masur , Oats, Mustard, Safflower

**Zaid (April- June):**

* Mnemonics- Road pe water bhar jane k karan CM ka BP high ho gaya
* Crops- Ridged Gourd, Watermelon, Cucumber, Muskmelon, Bitter gourd, Pumpkin

[Agricultural Stats 2017](https://eands.dacnet.nic.in/PDF/Agricultural%20Statistics%20at%20a%20Glance%202017.pdf)

Food grains prudction order- Rice> Wheat> Coarse cereals>Pulses

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Crop** | **Climatic conditions** | **Factoid** | **Soil** | **Areas/ States** |
| **Rice** | Kharif in NW (irrigated)  but in south peninsular states/WB (aus, aman, boro) around the year (rainfed)  **High temperature (25+)**  **High rainfall (annual 100cm +);** in areas with low rainfall, irrigation is required (eg. Punjab, Haryana) | **India is 2nd largest producer of rice in the world after China** | Soil not a constraint, but **alluvial** soil is preferred | **WB, UP, Punjab are leading producers** |
| **Wheat** | Rabi, (mostly irrigated)  **Cool climate**, with sunshine at the time of harvest  **50-75 cm annual rainfall**, evenly distributed through the growing season | India is second largest producer China is leading producer | Loammy is best | UP, MP, Punjab |
| **Millets (Jowar, Bajra, Ragi)** | Mainly Kharif crops (require temperature of 25-35 degrees)  1. Jowar/Shorgum: Rainfed (60-70 cm rain required)  2. Bajra and Ragi: can be grown in **drier regions**, with rainfall of 35-50 cm (Ragi is especially well-suited to grow in drier regions) | 1. Jowar is 3rd most important food crop wrt area and production-  India is leading millets producers | 1. Jowar and Bajra: Sandy/ black soil   1. 3. Ragi: Red/ black/ laterite soil | Total coarse cereals- MH, Rajsthan, KN  MaRKe |
| **Maize** | Mainly Kharif  21-27 degree temp.  50-75 cm rainfall |  | Old alluvial- well drained | **Maharashtra, Karnataka**,**MPMaKaM** |
| **Total cereals** |  | **Third largest producer in world** |  |  |
| **Pulses** | Both Rabi and Kharif (mainly a warm climate crop, but recently people have started growing these during Rabi as well)  Need less moisture, **can grow in dry conditions** | **India is the largest producer** and consumer of pulses in the world; and is the **net importer of pulses**  **90% area is rainfed** | sandy loam | Total pulses- MP, Maharashtra, Raj  MeMaR |
| **Crop** |  | **Factoid** | **Soil** | **Areas/ States** |
| **Sugarcane** | Kharif crop: needs hot, humid climate, and **high rainfall**  21-27 degree temp.  75-100 cm rainfall | **India is second largest producer, after Brazil** | Alluvial/ Black/ Laterite | **UP, Maharashtra, karnataka** |
| **Oilseeds** | Groundnut (Kharif)  Mustard (Rabi)  Soyabean (Kharif) | India is largest producer of oilseeds.  Soyabean (12mT), Groundnut (7.4 mT), Rapeseed & Mustard (7.4 mT), Castor (1.8 mT)  [Link](https://www.nfsm.gov.in/StatusPaper/NMOOP2018.pdf) | Loamy (groundnut) | Groundnut:**Gujarat, Raj, AP (GRA)**  Mustard/Rapeseed**Rajasthan (33%), MP,**  Haryana (RMH)  Soyabean- **MP, Maharasthra, Raj (MMR)**  Sunflower,**Karnataka, Odisha, AP (KOA)** |
| **Tea** | **Warm (21-29C), moist (150-200 cm), but frost-free climate throughout the year**; | India is the 2nd largest producer and (4th exporter) | Mountain soil (rich in humus, lime, iron)  - well drained and not water logged | **Assam, West Bengal,**TN (Nilgiris) |
| **Coffee** | 15-25 degrees temperature  150-250 cm rainfall | India produces about 4% of the world’s coffee (7th)  **Arabica** variety is produced in India |  | Nilgiri hills in **Karnataka, Kerala and Tamil Nadu** |
| **Horticulture crops** |  | **India is the largest producer of fruits and vegetables (produces about 13% of the world’s vegetables)** |  | Although these cover only 9% of total cropped area, they provide 25% of value of total agri produce! |
| **Crop** |  | **Factoid** | **Soil** | **Areas/ States** |
| **Rubber** | 25 degree+  **Moist and humid climate**-200 cm + rainfall required | Mainly an equatorial crop, but also grown in tropical and subtropical areas |  | Kerala, Tamil Nadu, AP, and Andamans |
| **Cotton** | Grows well in **drier parts of the black soil** of deccan plateau  Requires high temperature, light rainfall (50 cm) or irrigation **(REQUIRES HUMIDITY)**, mostly frost-free days (210 in the year minimum), and lots of sunshine | India is 2nd largest producer, and world’s largest exporter | Black soil | Top 3-**, MH, Gujarat, Telangana** |
| **Jute** | **High temperature** required: 27+  **High rainfall:** 170-250 cm | India is leading producer (60% of jute)- but losing share to low cost synthetic nylon | Alluvial soil (needs well-drained fertile soils in flood plains, that are replaced every year) | **West Bengal(75%) , Bihar, Assam**, |
| **Tabacco** |  |  |  | **AP, KN, Gujarat** |
| **Silk** |  |  |  | **KN, AP, WB** |
| **Mango** |  |  |  | **UP** |

|  |  |  |  |
| --- | --- | --- | --- |
| *Temp--->* | **Cool**  **(15-20)** | **Moderate**  **(20-25)** | **Hot**  **(25+)** |
| *Rainfall (down)* |
| **Dry (less than 50 cm p.a.)** |  | Pulses | Bajra, Ragi |
| **Moderate (50-100)** | Wheat (not during harvesting) | Maize, Cotton, Oil Seeds | Jowar |
| **Wet (100+)** | Coffee | Sugarcane, Tea, | Rubber, Jute, Rice Tabacco, most spices (pepper, turmeric etc.) |

Other factoids

* Irrigation covers only 33% of land, 2.5 times since independence
* Consumption of chemical fertizers has increased by 15 times since 60s; Punjab, Haryana- 3-4 times the national average of 91 kg per ha

Water resources

1. Discuss the water crisis in india? Challenges, solutions?
2. What is annual precipitation in India? What is the utilizable resources?
3. What region is called water stressed and water scarce as per CWC? What is India’s current status as per CWC?
4. Which river has highest and lowest potential of groundwater replenishment and utilization(%)?
5. Which rivers and states are the following projects associated with?
   * Bhakra-Nangal, Hirakud, Damodar Valley, Nagarjuna Sagar,Indira Gandhi Canal Project, Gandhi Sagar Dam, Sardar sarovar Dam
6. Which are the 4 most polluted river stretches in India? Which organization assseses this? What is the BOD benchmark for priority 1 river and healthy river? What category does Ganga fall in?
7. What is watershed management? Discuss its benefits and related govt. schemes
8. Which scheme for watershed is being implemented by help of World Bank?
9. Which scheme subsumed the earlier watershed mgmt related projects eg. DPAP, DDP, IWDP?
10. What is rainwater harvesting? What are the various techniques used and benefits of the same? (X)
11. What are key highlights of National Water Policy 2002? (X)
12. What are the key key highlights of Jal Krnati Abhiyan 2015?
13. Roughly what proportion of surface and groundwater withdrawals are accounted for by agriculture? (Page 64)
14. What is the cause for increasing incidence of arsenic and fluoride poisoning in many parts of India?
15. Which Indian state has made water-harvesting structures in every home compulsory? (Page 67)

Minerals and Energy resources

1. What is difference between ferrous and non-ferrous minerals? Give examples of non-ferrous minerals other than Iron ore
2. What are two types of non-metallic minerals?
3. Give a few names of mineral exploration companies in India? (GSI, ONGC, MECL, NMDC, BGML, IBM, NALCO, HCL)
4. ~~What are the major minerals in North-East, South-west , North-West, Himalyan belt? (Page 73~~)
5. True or False: India is well endowed with both ferrous and non-ferrous minerals. (P-76)
6. Which river valley in India contains maximum coal deposits?

Different resources- their abundance- annual revenues

|  |  |  |
| --- | --- | --- |
| Minerals | Factoids | Region |
| Iron ore | 95 % of iron ore in 8 states Odisha,Jharkhand, Chhattisgarh, Karnataka, Goa, Telangana, Andhra Pradesh and Tamil Nadu.  Two main types of ore found in our country are ***haematite* and**  ***Magnetite***  ***Karnataka is the leading producer*** | Region 1- OR- Mayurbhanj (Gurumahisani, Sulaipet, Badampahar), Kendujhar (Kiruburu), Sundargarh (Bonai); JH- Gua, Noamandi  Region 2- CG- Durg (Dali, Rajhara), Dantewara, Bailadila, MH- Chandrapur, Bhandara  Region 3- MH- Ratnagiri, Goa  Region 4- KA- Kudremukh, Chikmanglur (Baba budan hills), Tumakuru, Chitradurga, Ballari (AP border)  Region 5- Telangana- Karimnagar, Warangal, AP- Kurnool, Cuddpah, TN- Salem, Nilgiris  Key iron exporting ports- Marmagao, Mengaluru, Vishakhapattanam, Paradip |
| Manganese | **Orrissa (leading producer)**, Karnataka and MH, MP are major producers (Dharwar system)  Telangana, Goa, JH are minor producer | Region 1- MP- Balaghat, MH- Nagpur, Bhandara,  Region 2- OR-Bonai, Sundargarh,  Region 3- Goa  Region 4- KA- Shivamoga |
| Bauxite | Orrissa is the largets producer>MP+CG> Gujarat  Other major producers- MP, CG, GJ, MH  Other minor producer- TN, KA, Goa | Orrissa- Kalahandi, Sambalpur, Bolangir, Koraput  MP- Katni-Jabalpur, Amarkantak, Maikal hills,  CG- Bilaspur  Gujarat- Bhavnagar, Jamnagar  Maharashtra- Kolaba, Thane,  Ratnagiri, Satara, Pune and Kolhapur |
| Copper | Major producers- Raj, JH, MP  Minor- AP, KA, TN | Rajasthan- Khetri(Jhunjhunu), Alwar, Bhilwara, Udaipur  Jharkhand- Hazaribagh, Singhbhum  MP- Balaghat |
| Mica | Major producers- JH, AP, Telangana, Raj  Minor prodcuers- TN, WB, KL, MH, MP | JH- Hazirabagh  AP- Nellore  Raj- Jaipur to Bhilwara and Udaipur |
| Coal | About 80 per cent of the coal deposits in India is of bituminous type and is of non-coking  grade.  Anthracite is found only in J&K (best quality coal)  Jharia (largest coal field)  Raniganj (Oldest coal field)  Damodar valley (JH, WB)  Jharkhand is the largest coal producing state followed by Odisha  Order of coal in terms of carbon content: Anthracite> Butaminous> Legnite>Peaty | Gondwana Coal:  Region 1-,  JH- Bokaro, Jharia, Giridh, Karnpura, WB-Raniganj  Region 2:  MP- Singrauli(extends into UP), CG- Korba, OR- Talcher, Rampur  Region 3:  AP-(Pandur) TS- Singareni  MH(Chanda–Wardha, Kamptee and Bander)  Region 4: TN- Neyveli (lignite/Brown coal)  Region 5: J&K, Kalakot  Tertiary Coal  Assam- Janji, Najira, Makum  Meghalaya-W. Darrangiri (Garo hills), Langrin and East Darrangiri (Khasi hills), Bapung, **Ksan mine** (Jaintia), Cherapunji, Mewlong  Arunachal (Namchik, Namphuk)  Nagaland |
| Oil fields | ONGC explores oil fields in India (1956)  Digboi is the oldest oil field | Arabian sea- Mumbai High, Bassein  Assam- Sibsagar, Naharkatia, Digboi, Moran  Gujarat- Ankaleshwar, Kalol, Mehsana, Nawagam, Kosamaba, Lunej |
| Oil refinaries- | Jamnagar refinery is the largets in india  Digboi is field based oil refinery  Baruani is market based | AS (Numaligarh, Digboi, Guwahati, Bongaigaon),  Bihar (Barauni),  UP- (Mathura),  HR- (Panipat),  PB- Bathinda (U/C),  MP- Bina,  GJ- (Jamnagar, Koyali),  MH- (Mumbai)-  KA- (Mengaluru),  KL- (Kochi),  TN (Nagapattinam, Chennai),  AP- (Tatipakka, Vizag),  OR- Paradip (U/C),  WB- (Haldia) |
| Natural gas | GAIL (1984) is the gas exploration company in India | Regions- Gulf of khambat, Kaveri Basin (BoB), KG basin, Tripura, Rajasthan  HVJ pipeline- GJ- (Hazira, Vadodara), MP (Jhabua, Vijaipur), RJ (Anta), UP (Auraiya, Jagdhishpur, Shahjanpur, Aonla, Babrala, Shahidabad), HR (Gurgaon, Sonipat), Delhi |
| Nuclear energy | MH- Tarapur (oldest)  RJ-Rawatbhata near Kota TN- Kalpakkam, kudankulam- 2GW (largest)  UP- Narora  KA-Kaiga  GJ- Kakarapara  Largest planned (Jaitapur, MH- 9GW) | Uranium: Dharawar rocks  JH- Singhbhum, RJ- Jhunjhunu, Alwar, Udaipur, MH- Bhandara, CG- Durg, HP- Kullu  Cuddapah- AP/TS?  Thorium: Monazite and ilmenite in beach soil  AP (Vizag)- leading state, OR- Mahanadi delta, KL-Pallakad, Kollam, |
| Other energy |  | Solar- Raj, GJ  Wind- Raj, GJ, KA  Geothermal- Manikaran, HP  Waste to energy- Okhla, Delhi |

Manufacturing industries[(Link)](https://mrunal.org/tag/gsm1-geo-location/page/2?order=asc)

1. Discuss the role various factors in industrial location?
2. Although Bhadravati, Bhilai, and Rourkela are not major coal producing centers, why are lots of iron and steel industries located there? (Page 86)
3. Location factors for Iron and steel industry, sugar, cotton/textile,petrochemical, software parks?
4. Why do iron and steel industries locate quite close to their raw materials? (Page 87)
5. Apart from iron ore, list 5 main raw materials for producing iron and steel.
6. Which 3 steels plants were constructed after independence with foreign collaboration? They are managed by which govt. organization and built in collaboration with which country?
7. Where is Tandula dam located?
8. Which first port based steel plant in India?
9. When and where was first cotton mill set up in India? What led to it development in this area?
10. What led to subsequent set up of industries in almost all states of India?
11. What were the effects of partition on India’s cotton industry? (Page 93) (X)
12. At present, what is the driving factor behind location of cotton mills? (X)
13. Which is the largest cotton yarning state and city in India? Largest cotton yarning city of UP?
14. When and where was first sugar mill set up in India?
15. Which are top 2 sugar producing states in India?
16. What necessitate location of sugar mills near raw material?
17. What are the four kinds of petrochemical industries? (Page 95)
18. ~~Name the 3 govt. organization working in petrochemical sectors and their role?~~
19. What crude oil intermediaries are used to make polymer?
20. ~~When, where and by which organization first naptha based plastic industry set up in India?~~
21. What are the 8 major industrial regions in India?What are main industries and reason of development of the same?
22. Locate major industrial corridors in India? Discuss why are they located such.
23. What is the main cause of decline in industrial activity of the Hugli Industrial Region? (Page 100)

|  |  |
| --- | --- |
| Industry | Location |
| Iron and Steel | WB- Asansol, Durgapur, JH- Bokaro, Jhamshedpur, CG- Bhilai  OR- Rourkela, KA- Bhadravati, Vijaynagar, AP- Vizag  TN- Salem |
| Cotton Textile mills | WB- Murshidabad, Haora, Hughly, Kolkata, Serampur, Shyamnagar  UP- Sharanpur, Moradabad, Aligarh, Agra, Lucknow, Kanpur (Largest), Varnasi, Modinagar, Hathras  Delhi  MP- Ujjain, Dewas, Indore, Bahranpur  GJ- Porbandar, Rajkot, Ahmedabad, Vadodra, Surat  Maharashtra- Jalgaon, Nagpur, Aurangabad, Wardha, Mumbai, Pune, Solapur, Sangli, Kolhapur  Telangana- Warangal, Hyderabad  AP- Guntur  KA- Hubballi, Balari, Devangeree, Bangalore, Mysore  TN- Chennai, Salem, Coimbatore, Thanjavur, Madurai, Tuticorin, Tirunelveli |
| Petrochem | Naptha cracker:  UP- Auraiya, GJ- Jamnagar,Gandhinagar,Hajira, MH- Nagothane, Ratnagiri  AP- Vishakhapatnam, WB- Haldia  Polymers:  Mumbai, Barauni, Mettur, Pimpri, Rishra  Synthetic fibres:  Kota, Pimpri, Mumbai, Modinagar, Pune, Ujjain, Nagpur, Udhna |
| Software tech Park (21) | Srinagar, Mohali, Shimla, Delhi, Noida, Lucknow, Kanpur, Jaipur, Gandhinagar, Indore, Navi Mumbai, Pune, Hyderabad, Manipal, Bengaluru, Mysore, Trivendram, Chennai, Bhuvaneshwar, Kolkata, Guwahati |

Planning and sustainable development

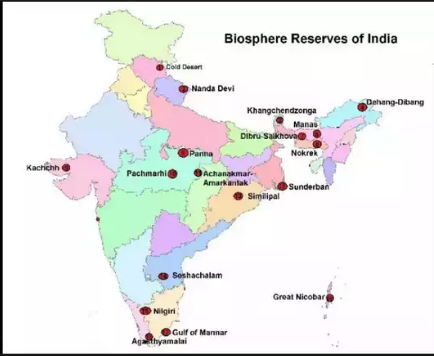
1. ~~What are objectivesof hill area planning (states involved) and drought prone area planning?~~
2. Which development plan was launched for Bharmaur region? It is fed by what rivers and supports which tribe?
3. Which UN commission defined sustainable development? In which report, its title and the definition
4. Where does Indira Gandhi Canal initate from?
5. What’s the difference between flow and lift irrigation? Which bank (right/left) of canal has flow/lift
6. What are the 7 steps propsed for sustainable development of command area? (X)
7. What is *warabandi* system?

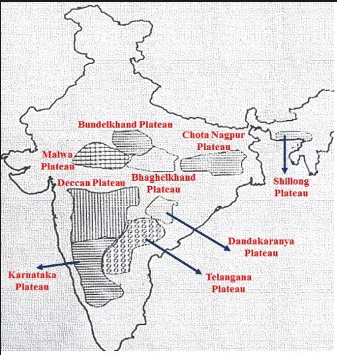
Transport and communication

1. Which cities do National Highways 1 and 2 connect? Who built it? What was its connectivity and name during british and mughal era? (Page 114)
2. NHAI is under the administration of which ministry? Which actconstituted NHAI? (Page 114)
3. What are the four major classifications of roads in India? Rank them in terms of % share of total road network that each accounts for ? Which authority is responsible for their construction?
4. Which is the highest motorable road in world? Which organization is responsible for its maintianence?
5. Which is the longest higway in India? Which states does it pass from?[(Link)](https://www.mapsofindia.com/answers/india/longest-national-highway-in-india/)<Haryana & KN too, though it can be avoided> - 11 states
6. Which state has highest and lowest road density?
7. What are key components of Bharatmala Scheme?
8. What is key objective of Setu Bharatam?
9. When was Indian Railways started? The train was started between which stations?
10. How many railway zones are there in India? Which is the latest entrant? (117)<South Coast>
11. What are the three main divisions of railways tracks based on the width of track? What are their % shares?
12. Konakan railways connects which two cities and 3 states?
13. What is the main reason behind inland waterways becoming un-navigable in many parts of the country? (Page 119 end) (X)
14. How many National Waterways exist in India? Which is the longest waterway in India? (Google)
15. What is the name of the famous Nehru Trophy Boat Race held in the backwaters of Kerala? (Page 121)
16. How many major and minor ports exit in India? Name all the major ports?
17. When was the first air transport started in India? Which two cities did it connect?
18. Which organization is responsible for constructing and managing oil and gas pipelines in India?
19. Which was the first pipeline in India and Asia?
20. When was National radio now know as Akashwani started in india under what name?
21. Where are 4 ports of Puducherry located?[(Link)](https://www.britannica.com/place/Puducherry-union-territory-India)

International trade

1. What % of the world’s trade does India account for?[(Link)](http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Country=IN&Language=F)
2. Why does india import edible oils in spite of being an agriculturally rich country? (P 126)
3. Which coast of India has more seaports? (Page 129)
4. What is the functional difference between a port being classified as ‘major’ or ‘minor’? (Page 129)
5. Which port is known as the ‘Queen of the Indian sea’? (Page 131)
6. Which port(s) is located on the following water bodies:-
   * Mahandi delta
   * Hughly delta
   * Zuari estuary
7. Which port of India is a land-locked harbor
8. Vadinar is a satellite port of which major port?
9. Which major port got advantage due to opening of Suez Canal?
10. Which is the first major port set up after independence in India? [(Link)](https://targetupsc17.wordpress.com/enayam-indias-13th-port/) Paradwip
11. Which is the only riverine port of India? (Haldia)
12. Which port is located on Willington island? (Cochin)
13. Which major port is located near Gulf of Munnar? (Tuticorin)
14. Which is the largest port on the east coast? (Chennai)
15. Which ports are renamed as V.O.Chidambaranar Port and Kamarajar Port Limited? (Tuticorin, Ennore)
16. Natural harbor- Mumbai, Marmagao,
17. Artificial harbor- Chennai,
18. Deepest harbor- Paradwip
19. Tidal- Kandla







India’s age pyramid-

<15- ~35%

15-65- 60%

>65- ~5%

