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ANSWERS & EXPLANATION

GENERAL STUIDES (P) TEST – 2430 (2018)

Q 1.D

- During its revolution around the sun, the earth is farthest from the sun (152 million km on 4th July). This position of the earth is called **aphelion**. On 3rd January, the earth is the nearest to the sun (147 million km). This position is called perihelion.

Q 2.B

- The ***Aral Sea*** is situated in Central Asia, between the Southern part of **Kazakhstan** and Northern **Uzbekistan**.

Q 3.B

- **Black soils** are are rich in lime, **iron, magnesia and alumina**. They also contain potash. But they **lack in phosphorous, nitrogen and organic matter**. The colour of the soil ranges from deep black to grey. Black soil covers most of the Deccan Plateau which includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.

Q 4.B

- The Northern plains have characteristic features of mature stage of fluvial erosional and depositional landforms such as sand bars, meanders, oxbow lakes and braided channels. The Brahmaputra plains are known for their riverine islands and sand bars. Most of these areas are subjected to periodic floods and shifting river courses forming braided streams. Marshes and swamps are also prevelant here. **Hence, options 1, 2 and 4 are correct.**
- Rift valleys are a feature of the peninsular rivers. **Hence, option 3 is not correct.**

Q 5.A

- Basic lava is **highly fluid**, is darker in colour and has **lower silica content**. As basic lava is non-viscous, it can reach very far from the vent before it finally cools down and solidifies. Therefore, basic lava **forms volcanoes with gentle slopes** with a wide diameter. It flows quietly and is not very explosive.

Q 6.D

- **The troposphere is the lowermost layer of the atmosphere.** Its average height is 13 km and extends roughly to a height of 8 km near the poles and about 18 km at the equator.
- The zone separating the tropsophere from stratosphere is known as the tropopause.The mesosphere lies above the stratosphere, which extends up to a height of 80 km. In this layer, once again, temperature starts decreasing with the increase in altitude and reaches up to minus 100°C at the height of 80 km.
- The stratosphere is found above the tropopause and extends up to a height of 50 km. **One important feature of the stratosphere is that it contains the ozone layer**. This layer absorbs ultra-violet radiation and shields life on the earth from intense, harmful form of energy.
- The upper limit of mesosphere is known as the mesopause. The **ionosphere is located between 80 and 400 km above the mesopause.** It contains electrically charged particles known as ions, and hence, it is known as ionosphere.

Q 7.D

Tropical Marine Climate:

- **This type of climate is experienced along eastern coast of tropical lands, receiving steady rainfall from Trade winds all the time.**
- The rainfall tends to have a summer maximum, but without any distinct dry period.
- There is no month without rainfall.
- **Tropical Marine Climate is favorable for habitation, but it is prone to severe tropical cyclones, hurricanes or typhoons.**

Q 8.D

The systems developing in the mid and high latitude, beyond the tropics are called the middle latitude or extra tropical cyclones. The passage of front causes abrupt changes in the weather conditions over the area in the middle and high latitudes. **Extra tropical cyclones form along the polar front.**

The extra tropical cyclone differs from the tropical cyclone in number of ways.

- The extra tropical cyclones have a clear frontal system which is not present in the tropical cyclones.
- **They cover a larger area and can originate over the land and sea. Whereas the tropical cyclones originate only over the seas and on reaching the land they dissipate.**
- The extra tropical cyclone affects a much larger area as compared to the tropical cyclone. The wind velocity in a tropical cyclone is much higher and it is more destructive.
- **The extra tropical cyclones move from west to east but tropical cyclones move from east to west.**

Q 9.A

- The latitudinal and longitudinal extent of India are roughly about 30 degrees, whereas the actual distance measured from north to south extremity is 3,214 km, and that from east to west is only 2,933 km.
- This difference is based on the fact that the distance between two longitudes decreases towards the poles whereas the distance between two latitudes remains the same everywhere. 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 at the equator. **Hence, statement 1 is correct and statement 2 is not correct**.

Q 10.A

- Karewas are the thick deposits of glacial clay and other materials embedded with moraines.
- The Kashmir Himalayas are famous for Karewa formations, which are useful for the cultivation of Zafran, a local variety of saffron.

Q 11.B

- **A plate may be composed of continental plate or oceanic plate** depending on which of the two occupy a larger portion of the plate. Plates move horizontally over the asthenosphere (mantle) as rigid units. Pacific plate is largely an oceanic plate whereas the Eurasian plate may be called a continental plate. **The slow movement of hot, softened mantle that lies below the rigid plates is the driving force behind the plate movement.**

Q 12.C

- **Statement 1 is correct**. As compared to the western coastal plain, the eastern coastal plain is broader and is an example of an emergent coast. There are well developed deltas here, formed by the rivers flowing eastward in to the Bay of Bengal. These include the deltas of the Mahanadi, the Godavari, the Krishna and the Kaveri. Because of its emergent nature, it has less number of ports and harbours.
- **Statement 2 is correct.** The western coastal plains are an example of submerged coastal plain. Because of this submergence it is a narrow belt and provides natural conditions for the development of ports and harbours. Kandla, Mazagaon, JLN port Navha Sheva, Marmagao, Mangalore, Cochin, etc. are some of the important natural ports located along the west coast.

Q 13.B

- The axis of the earth is inclined to the plane of the ecliptic (the plane in which the earth orbits round the sun) at an angle of 66.5 degrees, giving rise to different seasons and varying lengths of day and night. If the axis were perpendicular to this plane, all parts of the globe would have equal days and nights at all times of the year. **Hence, statement 1 is not correct**.
- In the northern hemisphere in the winter as we go northwards, the hours of darkness steadily increase. At the Arctic circle (66.5 degree North), the sun never 'rises' and there is darkness for the whole day in mid-winter on 22 December. Beyond the Arctic Circle the number of days with complete darkness increases, until we reach the North Pole (90 degree N) when half the year will have darkness.
- In the summer conditions are exactly reversed. Daylight increases as we go polewards. At the Arctic Circle, the sun never sets at mid-summer and there is complete 24-hour period of continuous daylight. In summer the region north of the Arctic Circle is popularly referred to as 'Land of the mid-night Sun'. **Hence, statement 2 is correct**.

Q 14.A

- The brief period between sunrise and full daylight is called dawn, and that between sunset and complete darkness is termed twilight. This is caused by the fact that during the **periods of dawn and twilight the earth receives diffused or refracted light from the sun whilst it is still below the horizon**. **Hence, statements 1 and 2 are correct**.
- Since the sun rises and sets in a vertical path at the equator the period during which refracted light is received is short. But in temperate latitudes, the sun rises and sets in an oblique path and the period of refracted light is longer. It is much longer still at the poles, so that the winter darkness is really only twilight most of the time. **Hence, statement 3 is not correct**.

Q 15.D

- **Katabatic winds:** During the night the slopes get cooled and the dense air descends into the valley as the mountain wind. The cool air, of the high plateaus and ice fields draining into the valley is called katabatic wind.
- **Anabatic winds** are upslope winds driven by warmer surface temperatures on a mountain slope than the surrounding air column.
- **Monsoon winds:** The type of wind system in which there is a complete or almost complete reversal of prevailing direction from season to season is known as the monsoon winds.
- **Land breeze:** It is a common local wind that affects only coastal area. During the night the land becomes very much cooler than the sea as land is quickly chilled than the sea. The air adjacent to the surface is also chilled with the result that there is a marked high pressure over land. Thus the cooler, heavier, denser air over the land flows towards the sea and land breeze occurs.

Q 16.D

- The air at the Inter Tropical Convergence Zone (ITCZ) rises because of convection caused by high insolation and a low pressure is created. The winds from the tropics converge at this low pressure zone. The converged air rises along with the convective cell.
- The easterlies from either side of the equator converge in the Inter Tropical Convergence Zone (ITCZ).

Q 17.B

- **Cumulus** clouds look like cotton wool. They are generally formed at a height of 4000-7000 m. They exist in patches and can be seen scattered here and there. They have a flat base.
- **Cirrus:** Cirrus clouds are formed at high altitudes (8000 - 12000m). They are thin and detatched clouds having a feathery appearance. They are always white in colour.
- **Stratus:** As their name implies, these are layered clouds covering large portions of the sky. These clouds are generally formed either due to loss of heat or the mixing of air masses with different temperatures.
- **Nimbus:** Nimbus clouds are black or dark gray. They form at middle levels or very near to the surface of the earth. These are extremely dense and opaque to the rays of the sun. Sometimes, the clouds are so low that they seem to touch the ground. Nimbus clouds are shapeless masses of thick vapour.

Q 18.A

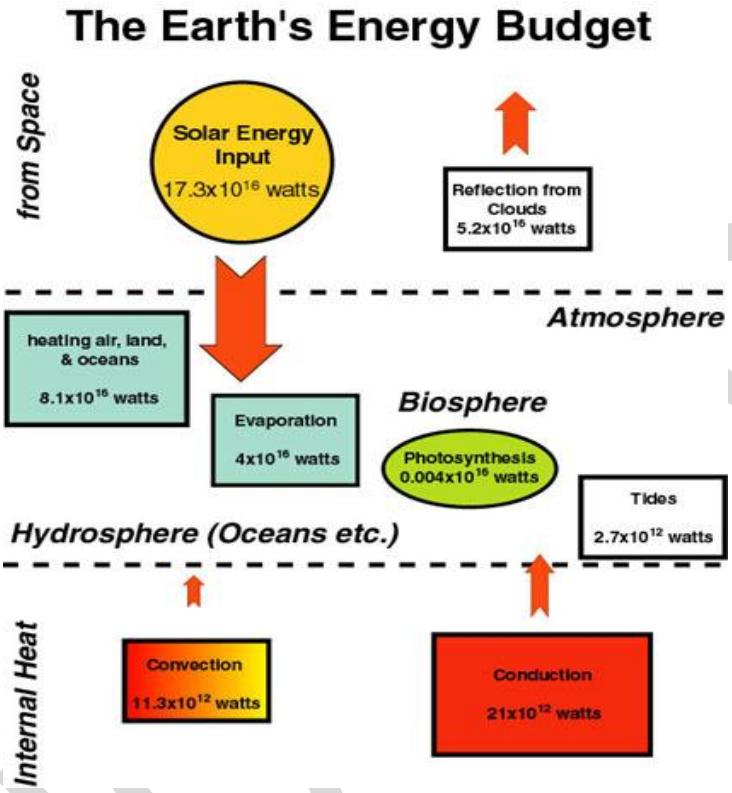
- The **Sinai Peninsula** is a triangular peninsula in **Egypt**. It is situated between the **Mediterranean Sea** to the north, and the **Red Sea** to the south. It is the only part of Egyptian territory located in Asia.

Q 19.A

- Soil erosion is essentially aggravated by faulty practices. Over -grazing and **shifting cultivation in many parts of India have affected the natural cover of land and given rise to extensive erosion**.
- Contour building, Contour terracing, regulated forestry, controlled grazing, cover cropping, mixed cropping and crop rotation are some of the remedial measures which are often adopted to reduce soil erosion.
- **Mixed Cropping** - Mixed cropping is a system of sowing two or three crops together on the same land, one being the main crop and the others the subsidiaries.
- **Crop rotation** - It is a method of farming where a number of different plants are grown one after the other on a field so that the soil stays healthy and fertile.

Q 20.B

- **Statement 1 is not correct.** The flow of ocean currents is not limited to the surface. Surface currents constitute about 10 per cent of all the water in the ocean, these waters are the upper 400 m of the ocean. Deep water currents make up the other 90 per cent of the ocean water.
- Warm ocean currents travel out from the equator along the surface, flowing towards the poles to replace the sinking cold water. That is how there exists a process of maintaing balance of heat budget. **Hence, statement 2 is correct.**



Q 21.B

- Out of the eight planets, mercury, venus, earth and mars are called as the inner planets as they lie between the sun and the belt of asteroids the other four planets are called the outer planets. Alternatively, the first four are called Terrestrial, meaning earth-like as they are made up of rock and metals, and have relatively high densities. The rest four are called Jovian or Gas Giant planets. Jovian means Jupiter-like. Most of them are much larger than the terrestrial planets and have thick atmosphere, mostly of helium and hydrogen. Kuiper belt lies beyond the planets, extending from the orbit of Neptune. It is similar to the asteroid belt, but is far larger and massive. **Hence, statement 1 is not correct and statement 2 is correct.**

Q 22.B

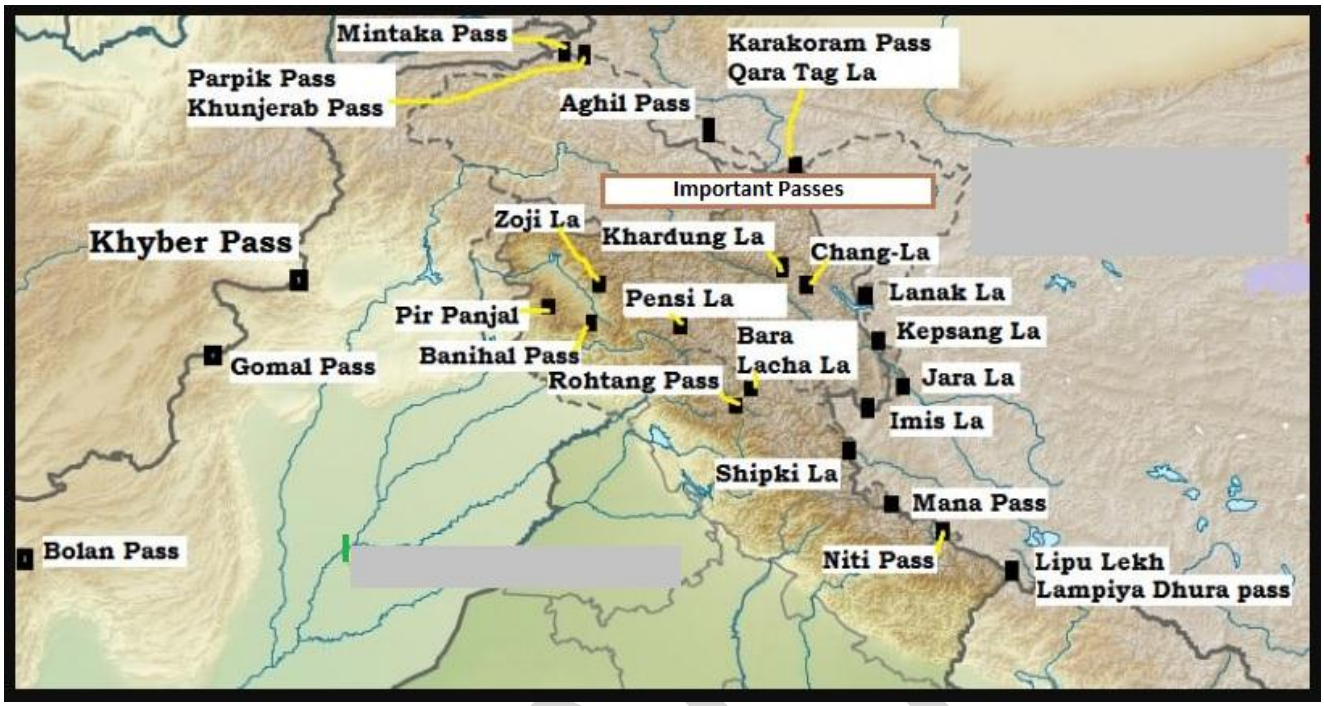
- The soil develops a reddish colour due to wide diffusion of iron in crystalline and metamorphic rocks. It looks yellow when it occurs in a hydrated form. The fine-grained red and yellow soils are normally fertile, whereas coarse-grained soils found in dry upland areas are poor in fertility.

Q 23.C

- Tides clear away the sediments brought by rivers (which are helpful for formation of delta). This helps in cleaning the coastal regions. **Hence, statement (c) is not correct**.
- Compared to the Sun, Moon exerts the strongest influence on tides because of its closeness to earth. When the moon is full or new, the gravitational pull of the moon and sun are combined. At these times, the high tides are very high and the low tides are very low. Since the position of the earth and the moon with respect to the sun changes throughout the year, we can utilise the potential energy of the water contained in the daily movement of the rising and falling sea levels to generate electricity.

Q 24.B

- **Zoji La** is located on the Great Himalayas, **Banihal** on the Pir Panjal, Photu La on the Zaskar and **Khardung La** on the Ladakh range.



Q 25.D

- The earth after being heated by insolation transmits the heat to the atmospheric layers near to the earth in long wave form.
- The air in contact with the land gets heated slowly and the upper layers in contact with the lower layers also get heated. This process is called **conduction**. Conduction takes place when two bodies of unequal temperature are in contact with one another, there is a flow of energy from the warmer to cooler body.
- The transfer of heat continues until both the bodies attain the same temperature or the contact is broken. Conduction is important in heating the lower layers of the atmosphere.
- The air in contact with the earth rises vertically on heating in the form of currents and further transmits the heat of the atmosphere. **This process of vertical heating of the atmosphere is known as convection.**
- The convective transfer of energy is confined only to the troposphere. The transfer of heat through horizontal movement of air is called advection.

Q 26.D

- Some of the deserts, like the **Atacama Desert** of Chile, the **Namib Desert** and Kalahari Desert of southern Africa, the **Mojave** Desert of USA and the western Australian desert, are the **result of cold oceanic currents that divert rain-laden air away from coastlines. Namib desert, Atacama Desert and Mojave Desert are the result Benguela Current, Humboldt current and California current respectively.**
- Others, like the Gobi and Takla Makan deserts of Mongolia and China, are simply so far away from the ocean that the winds lose any moisture they may hold long before reaching the far off continental interior.

Q 27.B

- Black Soil is also known as the 'Regur Soil' or the 'Black Cotton Soil'. They are generally clayey, deep and impermeable. They swell and become sticky when wet and shrink when dried. During the dry season, these soil develop wide cracks. They have a characteristic of slow absorption and loss of moisture. The black soil retains moisture for a very long time, which helps crops (even the rain fed ones), to sustain even during the dry season. Black soil is found in most of the Deccan Plateau which includes parts of

Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, upper reaches of the Godavari and the Krishna river basin and some parts of Tamil Nadu.

Q 28.A

All the pairs are correctly matched.
1. Satluj : Rakas Lake
2. Indus : Bokhar Chu glacier
3. Jhelum : Spring at Verinag
4. Chenab : Chandra and Bhaga stream
5. Ravi : Rohtang pass in the Kullu hills of Himachal Pradesh
6. Beas : Beas Kund in Rohtang Pass
7. Ghaghara : Mapchachugo glacier
8. **Son : Amarkantak plateau**
9. **Kaveri : Brahmagiri hills**
10. Krishna : Mahabaleshwar in Sahayadri
11. Narmada : Amarkantak plateau
12. Godavari : Rises near Nasik District of Maharashtra

Q 29.A

- Cirques are the most common of landforms in **glaciated mountains.** The cirques quite often are found at the heads of glacial valleys. The accumulated ice cuts these cirques while moving down the mountain tops. They are deep, long and wide troughs or basins with very steep concave to vertically dropping high walls at its head as well as sides.
- A crevasse is a deep crack, or fracture, found in an ice sheet or glacier, as opposed to a crevice that forms in rock. Crevasses form as a result of the movement and resulting stress associated with the shear stress generated when two semi-rigid pieces above a plastic substrate have different rates of movement.

Q 30.C

- **Statement 1 is correct:** An easterly jet stream, called the sub-tropical easterly jet stream blows over peninsular India, approximately over 14°N during the summer months after the western jet stream has withdrawn itself from the region.
- **Statement 2 is correct:** The easterly jet stream is held responsible for the **burst of the monsoon** in India. The Monsoon, unlike the trades, are not steady winds but are pulsating in nature, affected by different atmospheric conditions encountered by it, on its way over the warm tropical seas. The duration of the monsoon is between 100- 120 days from early June to mid-September. Around the time of its arrival, the normal rainfall increases suddenly and continues constantly for several days. This is known as the 'burst' of the monsoon, and can be distinguished from the pre-monsoon showers. The monsoon arrives at the southern tip of the Indian peninsula generally by the first week of June. Subsequently, it proceeds into two - the Arabian Sea branch and the Bay of Bengal branch.

Q 31.C

- **Both the statements are correct.** Gravitational force is an indirect source about interior of earth. The gravitational force is not the same at different latitudes on the surface. **It is greater near the poles and less at the equator.** This is because of the distance from the centre at the equator being greater than that at the poles. The gravity values also differ according to the mass of material. **The uneven distribution of mass of material within the earth influences this value**. The reading of the gravity at different places is influenced by many other factors. These readings differ from the expected values. Such a difference is called gravity anomaly. Gravity anomalies give us information about the distribution of mass of the material in the crust of the earth.

Q 32.B

- **Statement 1 is not correct :** EI-Nino is an extension of the warm equatorial current which gets replaced temporarily by cold Peruvian current or Humbolt current.This current increases the temperature of water on the Peruvian coast by 10°C.

- **Statements 2 and 3 are correct :**EI-Nino results in the distortion of equatorial atmospheric circulation as well as causes irregularities in the evaporation of sea water and reduction in the amount of planktons which further reduces the number of fish in the sea

Q 33.A

- Salinity of oceans is highest between 20 degrees to 30 degrees North and South latitudes as the rate of evaporation is very high there due to high temperature and low humidity. Temperate oceans have lesser salinity due to lower temperature and thus lower rate of evaporation. Polar waters will have even lesser salinity because of **lower evaporation and continual addition of freshwater** from melting icebergs.
- Equatorial waters have lower than average salinity because of heavy rainfall and high relative humidity, as precipitation adds good amount of freshwater to the ocean water.
- High atmospheric pressure is not the reason for low salinity in polar oceans.

Q 34.A

- **Tropical Evergreen Forests** - Species found in these forests include **rosewood**, mahogony, ebony, etc. forests are well stratified, with layers closer to the ground and are covered with shrubs and creepers with short structured trees followed by tall variety of trees.
- Semi Evergreen Forests -Main species are white cedar, hollock and kail. The undergrowing climbers provide an evergreen character to these forests. Such forests have a mixture of evergreen and moist deciduous trees.
- Moist Deciduous Forests - **Teak**, sal, shisham, hurra, mahua, amla, semul, kusum, and sandalwood etc. are the main species of these forests.
- **Dry Deciduous Forests** - **Tendu**, palas, amaltas, bel, axlewood, etc. are the common trees of these forests. As the dry season begins, the trees shed their leaves completely and the forest appears like a vast grassland with naked trees all around.
- **Tropical Thorn Forests** - Important species found are babool, ber, and wild date palm, khair, neem, khejri, palas, etc. In these forests, plants remain leafless for most part of the year and give an expression of scrub vegetation.

Q 35.C

- **Mediterranean type of climate:**
- Entirely confined to the western portion of continental masses, between 30° and 45° north and south of the equator. The basic cause of this type of climate is the **shifting of the wind belts**. Mediterranean Sea has the greatest extent of this type of 'winter rain climate', and gives rise to the name Mediterranean Climate.
- **A dry, warm summer with off-shore trades:** In summer when the sun is overhead at the Tropic of Cancer, the belt of influence of the Westerlies is shifted a little pole wards. Rain bearing winds are therefore not likely to reach the Mediterranean lands. The prevailing Trade Winds (tropical easterlies) are off-shore and there is practically no rain. Strong winds from inland desert regions pose the risk of wildfires.
- **Rainfall in winter with on-shore Westerlies:** The Mediterranean lands receive most of their precipitation in winter when the Westerlies shift equator wards. In the northern hemisphere, the prevailing on-shore Westerlies bring much cyclonic rain from the Atlantic (Typical to Mediterranean Climate). The rain comes in heavy showers and only on a few days with bright sunny periods between them. This is another characteristic feature of the Mediterranean winter rain.

Q 36.B

Important Drainage Patterns:

- The drainage pattern resembling the branches of a tree is known as "dendritic" the examples of which are the rivers of northern plain. **Hence, pair 3 is correctly matched.**
- When the rivers originate from a hill and flow in all directions, the drainage pattern is known as 'radial'. The rivers originating from Amarkantak range present a good example of it.
- When the primary tributaries of rivers flow parallel to each other and secondary tributaries join them at right angles, the pattern is known as 'trellis'. **Hence, pair 2 is correctly matched.**

- When the rivers discharge their waters from all directions into a lake or depression, the pattern is known as 'centripetal'. **Hence, pair 1 is not correctly matched.**

Q 37.A

- Soil creep refers to **slow, gradual but more or less continuous movement of soil down the hillslopes.** The movement is not very noticeable especially when the slope is fairly gentle or when the soil is well covered with grass or other vegetation.

Q 38.C

Characteristics of Equatorial type of Climate:

- The equatorial hot and wet climate is found between 5° and 10° north and south of the equator. Its greatest extent is found in the lowlands of the Amazon, the Congo, Malaysia and the East Indies.
- The most outstanding feature of the equatorial climate is its **great uniformity of temperature throughout the year**. The mean monthly temperatures are always around 22°C with very little variation. There is no winter. Cloudiness and **heavy precipitation** help to moderate the daily temperature, so that even at the equator itself, the climate is not unbearable. These regions usually experience 2000 mm of rainfall or more in a year. Equatorial regions are affected by the ITCZ. As the ITCZ passes over these areas it brings heavy rainfall and thunderstorms. In some areas, the ITCZ causes two periods of very heavy rainfall every year. One occurs when the ITCZ crosses these areas on its way north and another occurs when it crosses these areas again on its way south.

Q 39.B

Constituent Percentage by Volume

- Nitrogen 78.08
- Oxygen 20.95
- Argon 0.93
- Carbon dioxide 0.036
- Neon 0.002
- Helium 0.0005
- Krypto 0.001
- Xenon 0.00009
- Hydrogen 0.00005

Q 40.C

- In the course of the year, the earth's revolution round the sun, with its axis inclined at 66.5 degrees to the plane of the ecliptic, changes the apparent altitude of the midday sun. The sun is vertically overhead at the equator on two days each year. These are usually 21 March and 21 September though the date changes because of year is not exactly 365 days. These two days are termed equinoxes meaning 'equal nights' because on these two days all parts of the world have equal days and nights. **Hence, statement 2 is correct.**
- After the March equinox the sun appears to move north and is vertically overhead at the Tropic of Cancer (23.5 degrees North) on about 21 June. This is known as the June or summer solstice, when the northern hemisphere will have its longest day and night. By about 22 December, the sun will be overhead at the Tropic of Capricorn (23.5 degrees South). This is the winter solstice when the southern hemisphere will have its longest day and shortest night. The tropics thus mark the limits of the overhead sun, for beyond these, the sun is never overhead at any time of the year. **Hence, statement 1 is correct**.

Q 41.D

- **All the statements are correct.** Major fishing grounds are located at places where hot currents meet cold currents, like New Found Island, where Gulf Stream meets Labrador currents or Japanese Coast, where Kurshio currents meet Oyashio currents.
- Warm North Atlantic drift flowing towards Britain Coasts prevent it from freezing.
- Peruvian or humbolt Current is a cold current passing through Pacific Ocean on the coast of Peru. It plays a major role in Indian Monsoon. When this current flows in normal course, it keeps high pressure area and Indian Sub-continent remains low pressure because of which the wind bearing moisture flows towards Indian Sub-continent. But in certain years the current is warmer than usual because of which a Low Pressure area is also created in the Peruvian and Chile Coasts, and the Moisture of the ocean flows towards the Peruvian coast also this result to lesser rainfall in Indian Sub-Continent. This phenomenon is popularly known as El-Nino.

Q 42.A

The correct arrangement is: River capturing- Meanders- Deltas

Features of a river on the upper course:

- River capturing : Also known as river piracy or river beheading. Its development is dependent on differential rate of back-cutting into a divide.
- Rapids, cataracts and waterfalls.

Middle or valley course:

- Meanders
- River cliffs and slip- offs slopes

Lower or Plain Course:

- Flood plain
- Ox-bow lakes
- Deltas

Q 43.A

- The rift valleys are caused by upheaval of the Himalayas when the northern flank of the Peninsular block was subjected to subsidence and the consequent trough faulting. **Hence, statement 1 is correct.**
- The Narmada and the Tapi flow in trough faults and fill the original cracks with their detritus materials. Hence, there is a lack of alluvial and deltaic deposits in these rivers. **Hence, statement 2 is not correct.**

Q 44.C

Both the statements are correct.

- A river drains the water collected from a specific area, which is called its 'catchment area'.
- An area drained by a river and its tributaries is called a drainage basin.
- The boundary line separating one drainage basin from the other is known as the watershed.
- The catchments of large rivers are called river basins while those of small rivulets and rills are often referred to as watersheds. There is, however, a slight difference between a river basin and a watershed. Watersheds are small in area while the basins cover larger areas.
- The pattern of flow of water in a river channel over a year is known as its regime.

Q 45.D

The circulation pattern of planetary winds largely depends on:

- latitudinal variation of atmospheric heating
- emergence of pressure belts
- the migration of belts following apparent path of the sun
- the distribution of continents and oceans
- the rotation of earth.

Q 46.B

- Earthquakes and volcanic eruptions that cause the sea-floor to move abruptly resulting in sudden displacement of ocean water in the form of high vertical waves are called tsunamis (harbour waves) or seismic sea waves.
- **The speed of wave in the ocean depends upon the depth of water. It is more in the shallow water than in the ocean deep**. As a result of this, the impact of tsunami is less over the ocean and more near the coast where they cause large-scale devastations. Therefore, a ship at sea is not much affected by tsunami and it is difficult to detect a tsunami in the deeper parts of sea. It is so because **over deep water the tsunami has very long wave-length and limited wave-height.** Thus, a tsunami wave raises the ship only a metre or two and each rise and fall takes several minutes. As opposed to this, when a tsunami enters shallow water,its wave-length gets reduced and the period remains unchanged, which increases the waveheight.Sometimes, this height can be up to 15m or more, which causes large-scale destructions along the shores. Thus, these are also called Shallow Water Waves. **Tsunamis are frequently observed along the Pacific ring of fire**, particularly along the coast of Alaska, Japan, Philippines, and other islands of Southeast Asia, Indonesia, Malaysia, Myanmar, Sri Lanka, and India etc.
- **Hence, statement 1 is not correct and 2 is correct.**

Q 47.A

- The **southern part of the Vindhyan Range up to Katangi is called Bhander Range.** Beyond this point the escarpment enclosing the land-locked valley of Sirampur and **the hill range in continuation is called the Kaimur Range.**
- The **Mahadeo Hills** are a range of hills in Madhya Pradesh state of central India. The **hills form the central part of the Satpura Range**.
- The Maikal Hills are range of hills in the state of Chhattisgarh India. The **Maikal Hills are an eastern part of the Satpuras** in Kawardha District of Chhattisgarh.

Hence, pairs 1 and 2 are correctly matched.

Q 48.C

- **All the options are correct.**
- The northern boundary of the Peninsular Block may be taken as an irregular line running from Kachchh along the western flank of the **Aravali Range near Delhi** and then roughly parallel to the Yamuna and the Ganga as far as the Rajmahal Hills and the Ganga delta. Apart from these, the Karbi Anglong and the **Meghalaya Plateau** in the northeast and Rajasthan in the west are also extensions of this block. The northeastern parts are separated by the Malda fault in West Bengal from the **Chotanagpur plateau**. In Rajasthan, the desert and other desert–like features overlay this block.

Q 49.D

- **Spring tides**: The position of both the sun and the moon in relation to the earth has direct bearing on tide height. When the sun, the moon and the earth are in a straight line, the height of the tide will be higher. These are called spring tides and they occur twice a month, one on full moon period and another during new moon period.
- **Neap tides**: Normally, there is a seven day interval between the spring tides and neap tides. At this time the sun and moon are at right angles to each other and the forces of the sun and moon tend to counteract one another.

Q 50.A

- **Black soil** covers most of the Deccan Plateau which includes parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh and some parts of Tamil Nadu.
- **The laterite soils** are commonly found in Karnataka, Kerala, Tamil Nadu, Madhya Pradesh and the hilly areas of Odisha and Assam.
- **Arid soils** are characteristically developed in western Rajasthan.

Q 51.D

- Earthquakes have all encompassing disastrous effects on the area of their occurrence. Some of the important ones are:
- On Ground: Fissures, **landslides**, **liquefaction**, possible chain-effects etc.
- On manmade structures: Cracking, buckling, overturning, sliding, collapse, possible chain-effects etc.
- On water: **Tsunami**, hydro-dynamic pressure, waves, possible chain-effects etc.

Q 52.A

The temperature of air at any place is influenced by:

- the latitude of the place
- the altitude of the place
- distance from the sea, the airmass circulation
- the presence of warm and cold ocean currents
- local aspects

Q 53.B

- Nitrogen is a major constituent of the atmosphere comprising about seventy-nine per cent of the atmospheric gases. It is also an essential constituent of different organic compounds such as the amino acids, nucleic acids, proteins, vitamins and pigments. Only a few types of organisms like **certain species of soil bacteria and blue green algae are capable of utilizing it directly in its gaseous form.** Generally, nitrogen is usable only after it is fixed. Ninety per cent of fixed nitrogen is biological. **Hence, statement 1 is not correct.**
- The principal source of free nitrogen is the action of soil micro-organisms and associated plant roots on atmospheric nitrogen found in pore spaces of the soil. Nitrogen can also be **fixed in the atmosphere by lightning and cosmic radiation**. **Hence, statement 2 is correct.**

Q 54.C

- Canaries is a cold current in the Atlantic ocean and Humboldt current is a cold current in Pacific ocean.
- **Agulhas current** is a warm ocean current in the Indian ocean and **North Atlantic drift** is a warm ocean current in the Atlantic ocean.

Q 55.D

- The correct order is: Dafla hills – Miri hills – Abor hills – Mishmi hills

Q 56.B

- When the moisture is deposited in the form of water droplets on cooler surfaces of solid objects (rather than nuclei in air above the surface) such as stones, grass blades and plant leaves, it is known as dew. **The ideal conditions for its formation are clear sky, calm air, high relative humidity, and cold and long nights.** For the formation of dew, it is necessary that the dew point is above the freezing point.

Q 57.D

All the pairs are correctly matched.

- Himalayan mountains are tectonic in origin, dissected by fast-flowing rivers which are in their youthful stage. The Himalayas along with other Peninsular mountains are young, weak and flexible in their geological structure unlike the rigid and stable Peninsular Block. Consequently, they are still subjected to the interplay of **exogenic and endogenic forces**, resulting in the development of faults, folds and thrust plains.
- The Northern plains are formed by the river Indus, the Ganga and the Brahmaputra. Originally, it was a **geo-synclinal depression** which attained its maximum development during the third phase of the Himalayan mountain formation approximately about 64 million years ago. Since then, it has been gradually filled by the sediments brought by the Himalayan and Peninsular rivers. Average depth of alluvial deposits in these plains ranges from 1,000-2,000 m.
- The western coastal plains are an example of **submerged coastal plain**. As compared to the western coastal plain, the eastern coastal plain is broader and is an example of an **emergent coast.**

Q 58.A

China type climate:

- This type of climate is found on the eastern margin of continent in warm temperate latitudes, just outside the tropics & comparatively has more rainfall than the Mediterranean climate in the same latitudes, coming mainly in summers.
- Warm temperate eastern margin climate is typified by a warm, moist summer & a cool, dry winter strongly modified by maritime influence.
- Ocasionally, the penetration of cold air from the continental interiors may bring down the temperature to the freezing point, but most of the time it is pleasantly warm.
- Rainfall is anything in-between 75 cm to 150 cm, fairly distributed throughout the year, with no dry month, except in the interiors of central China.
- Cool temperate continental (Siberian) climate is only experienced in northern hemisphere, where the continents within the high latitudes have a broad east west spread. **Hence, option (b) is not correct.**
- Laurentian type of climate is absent in the southern hemisphere. **Hence, option (c) is not correct.**
- Mediterranean Sea has the greatest extent of this type of 'winter rain climate', and gives rise to the name Mediterranean Climate. **Hence, option (d) is not correct.**

Q 59.D

The interior of the earth can be understood only by indirect evidences as neither any one has nor any one can reach the interior of the earth. Yet, a part of the information is obtained through direct observations and analysis of materials.

Direct Sources:

- The most easily available solid earth material is **surface rock or the rocks** we get from mining areas.
- **Volcanic eruption** forms another source of obtaining direct information. As and when the molten material (magma) is thrown onto the surface of the earth, during volcanic eruption it becomes available for laboratory analysis.

Another source of information are the **meteors** that at times reach the earth. However, it may be noted that the material that becomes available for analysis from meteors, is not from the interior of the earth. The material and the structure observed in the meteors are similar to that of the earth. Meteors are indirect sources of information about interior of earth.

Q 60.D

- Rocks do not remain in their original form for long but may undergo transformation. Rock cycle is a continuous process through which old rocks are transformed into new ones. **Igneous rocks are primary rocks** and other rocks (sedimentary and metamorphic) form from these primary rocks.

Q 61.D

- The insolation received by the earth is in short waves forms and heats up its surface. **The earth after being heated itself becomes a radiating body and it radiates energy to the atmosphere in long wave form**. This energy heats up the atmosphere from below. This process is known as terrestrial radiation.
- The long wave radiation is absorbed by the atmospheric gases particularly by carbon dioxide and the other green house gases. Thus, the atmosphere is indirectly heated by the earth's radiation. The atmosphere in turn radiates and transmits heat to the space.
- Finally the amount of heat received from the sun is returned to space, thereby maintaining constant temperature at the earth's surface and in the atmosphere.
- **The earth as a whole does not accumulate or loose heat. It maintains its temperature. This can happen only if the amount of heat received in the form of insolation equals the amount lost by the earth through terrestrial radiation.**

Q 62.B

- Rub al khali is the largest continuous sand desert in the world located in Saudi Arabia. Yemen, Oman and UAE. **Hence, pair 1 is not correctly matched**.
- **Dasht-e Lut** and Dasht-e Kavir are large salt deserts located in Iran. **Mojave desert** is located in North America. **Hence, pair 2 is correct** and **pair 3 is not correct.**

Q 63.A

- A part of a river slope and the surrounding area gets uplifted and the river sticks to its original slope, cutting through the uplifted portion like a saw (vertical erosion or Vertical down cutting), and forming deep gorges: this type of drainage is called Antecedent drainage.
- Rivers older than Himalayas form antecedent drainage.
- **Examples:** Indus, Satluj, Brahmaputra, Kali, Tista, Kosi, Subansiri etc.

Q 64.A

- The Coriolis effect (also called the Coriolis force) is defined as the apparent deflection of objects (such as airplanes, wind, missiles, and ocean currents) moving in a straight path relative to the earth's surface. Its strength is proportional to the speed of the earth's rotation at different latitudes but it has an impact on moving objects across the globe.
- **The Coriolis deflection is related to the veloity of the object, the motion of the Earth, and the latitude.**
- The rotation of the earth about its axis affects the direction of the wind. This force is called the Coriolis force after the French physicist who described it in 1844. **It deflects the wind to the right direction in the northern hemisphere and to the left in the southern hemisphere.**
- The wind circulation around a low is called cyclonic circulation. Around a high it is called anti-cyclonic circulation. The direction of winds around such systems changes according to their location in different hemispheres.

Q 65.B

- **Dominance of Monsoon winds in North Indian Ocean** is the primary reason for reversal of direction of ocean current. Oceanic current all over the world circulate because of planetary winds, but in Indian Ocean, when the ITCZ shifts to Indian Sub-continent, the directions of wind also changes. In summer from June to October when South-West Monsoon wind is dominant, the currents are blown from South Westerly direction, in winters when North-Eastern Monsoon wind is dominant the current are blown from North-east as North-East Monsoon.

Q 66.A

- Evolution of Lithosphere-The earth was mostly in a volatile state during its primordial stage. Due to gradual increase in density the temperature inside has increased. As a result the material inside started getting separated depending on their densities. This allowed heavier materials (like iron) to sink towards the centre of the earth and the lighter ones to move towards the surface. With passage of time it cooled further and solidified and condensed into a smaller size. This later led to the development of the outer surface in the form of a crust. During the formation of the moon, due to the giant impact, the earth was further heated up.

- It is through the **process of differentiation** that the **earth forming material got separated into different layers.** Starting from the surface to the central parts, we have layers like the crust, mantle, outer core and inner core. From the crust to the core, the density of the material increases.

Q 67.D

- **Statement 1 is correct:** Towards the end of summer, there are pre-monsoon showers which are a common phenomena in Kerala and coastal areas of Karnataka. they help in the early ripening of mangoes.

- **Statement 2 is correct:** In Assam Norwesters are known as Bardoli Chheerha. Norwesters are dreaded evening thunderstorms in Bengal and Assam.

- **Statement 3 is correct:** Kalbaisakhi showers in West Bengal are useful for tea, jute and rice cultivation.

Q 68.C

- Mass movements transfer the mass of rock debris down the slopes under the direct influence of gravity. They are **aided by gravity** and geomorphic agents like running water, glaciers, wind, waves and currents are not primarily responsible for the the process of mass movements.

Q 69.B

- The ocean floor may be segmented into three major divisions based on the depth as well as the forms of relief. These divisions are continental margins, deep-sea basins (abyssal plains) and mid-ocean ridges. Continental Margins form the transition between continental shores and deep-sea basins. They include **continental shelf, continental slope, continental rise and deep-oceanic trenches**.

Q 70.A

Rivers flowing towards the West into the Arabian Sea:

- Shetruniji - rises near Dalkahwa in Amreli district.
- Bhadra - originates near Aniali village in Rajkot district.
- Dhadhar - rises near Ghantar village in Panchmahal district.
- **Sabarmati** and Mahi
- Vaitarna - rises from the Trimbak hills in Nasik district
- Kalinadi - rises from Belgaum district
- Bedti river
- **Sharavati** - originates in Shimoga district of Karnataka
- **Mandovi** and Juari in Goa.
- Bharathapuzha rises near Annamalai hills. (Kerela)
- The Periyar Kerala. Its catchment area is 5,243 sq. km.
- Another river of Kerala worth mentioning is the Pamba river which falls in the Vemobanad lake after traversing a course of 177 km.

Q 71.A

- Tropical wet Evergreen forests are found in **warm and humid areas with an annual precipitation of over 200 cm and mean annual temperature above 22°C.**
- These **forests are well stratified, with layers closer to the ground** and are covered with shrubs and creepers, with short structured trees followed by tall variety of trees. In these forests, trees reach great heights up to 60 m or above.
- **There is no definite time for trees to shed their leaves, flowering and fruition.** As such these forests appear green all the year round

Q 72.D

None of the pairs are correctly matched.

- **Barchans:** Crescent-shaped sand dunes
- **Kayals:** Backwaters situated on western coastal plains
- **Bhabar:** Bhabar is a narrow belt ranging between 8-10 km parallel to the Shiwalik foothills at the break-up of the slope. As a result of this, the streams and rivers coming from the mountains deposit heavy materials of rocks and boulders, and at times, disappear in this zone.

Q 73.C

- The release of energy occurs along a fault. A fault is a sharp break in the crustal rocks. Rocks along a fault tend to move in opposite directions. As the overlying rock strata press them, the friction locks them together. However, their tendency to move apart at some point of time overcomes the friction. As a result, the blocks get deformed and eventually, they slide past one another abruptly. This causes a release of energy, and the energy waves travel in all directions. The **point where the energy is released is called the focus of an earthquake, alternatively, it is called the hypocentre**.

Q 74.B

- Earthquake waves are basically of two types — body waves and surface waves. **Body waves are generated due to the release of energy at the focus** and move in all directions travelling through the body of the earth. The body waves interact with the surface rocks and generate new set of waves called surface waves. These waves move along the surface. The velocity of waves changes as they travel through materials with different densities. **The denser the material, the higher is the velocity.**
- There are two types of body waves. They are called P and S-waves. P-waves move faster and are the first to arrive at the surface. These are also called 'primary waves'. **The P-waves are similar to sound waves. They travel through gaseous, liquid and solid materials.** S-waves arrive at the surface with some time lag. These are called secondary waves. An important fact about S-waves is that they can travel only through solid materials.

Q 75.C

Both the statements are correct.

- The islands of Bay of Bengal are divided into two broad categories – the Andaman in the north and the Nicobar in the south. They are separated by a water body which is called the Ten degree channel. It is believed that these islands are an **elevated portion of submarine mountains**. However, some smaller islands are volcanic in origin. Barren island, the only active volcano in India is also situated in the Nicobar islands.
- The islands of the Arabian sea include Lakshadweep and Minicoy. These are scattered between 8°N-12°N and 71°E -74°E longitude. These islands are located at a distance of 240-480 km off the Kerala coast. **The entire island group is built of coral deposits.**

Q 76.C

Tropical cyclones originate and intensify over warm tropical oceans. The conditions favourable for the formation and intensification of tropical storms are:

- Large sea surface temperature higher than 27° C
- Presence of the coriolis force
- Small variations in the vertical wind speed
- A pre-existing weak low- pressure area or low-level-cyclonic circulation
- Upper divergence above the sea level system.

Q 77.B

- In moist deciduous forests, the rainfall ranges between 100-200 cm. These forests are found in the northeastern states along the foothills of Himalayas, eastern slopes of the Western Ghats and Odisha. **Hence, statement 2 is correct.**
- Parkland topography with open stretches is found in Dry Deciduous forests . **Hence, statement 1 is not correct.**
- Tussocky grass grows in Tropical Thorn Forests. **Hence, statement 3 is not correct.**

Q 78.B

- In South America only **Bolivia** and **Paraguay** are landlocked.

Q 79.D

- The **Panama Canal** is an artificial 48-mile (77 km) waterway in Panama that connects the Caribbean Sea (in Atlantic Ocean) with the Pacific Ocean. It is a key conduit for international maritime trade.

Q 80.A

- The correct order from east to west is: Kosi- Gandak- Son- Yamuna

Q 81.A

- The most popular argument regarding the origin of the universe is the Big Bang Theory. It is also called expanding universe hypothesis. **Edwin Hubble, in 1920, provided evidence that the universe is expanding**.

Q 82.C

- Albedo is a measure for reflectance or optical brightness of a surface. It is the fraction of solar energy (shortwave radiation) reflected from the Earth back into space. Ice, especially with snow on top of it, has a high albedo: most sunlight hitting the surface bounces back towards space.

Q 83.D

The amount and the intensity of insolation vary during a day, in a season and in a year. The factors that cause these variations in insolation are:

- the rotation of earth on its axis
- the angle of inclination of the sun's rays
- the length of the day
- the transparency of the atmosphere
- the configuration of land in terms of its aspect.

Q 84.C

Ocean currents are influenced by two types of forces namely:

- primary forces that initiate the movement of water;
- Secondary forces that influence the currents to flow.

The primary forces that influence the currents are:

- heating by solar energy;
- wind;
- gravity;
- Coriolis force.

Heating by solar energy causes the water to expand. That is why, near the equator the ocean water is about 8 cm higher in level than in the middle latitudes. This causes a very slight gradient and water tends to flow down the slope.

Wind blowing on the surface of the ocean pushes the water to move. Friction between the wind and the water surface affects the movement of the water body in its course.

Gravity tends to pull the water down the pile and create gradient variation.

The **rotation of earth** results in coriolis force. The Coriolis force intervenes and causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere. These large accumulations of water and the flow around them are called Gyres. These produce large circular currents in all the ocean basins.

Earth's revolution does not have an effect on ocean currents but it plays a major role in formation of Tides.

Q 85.D

- **All the given features are characterisitc of peninsular rivers.**
- Peninsular rivers are characterised by fixed course, absence of meanders and non-perennial flow of water. The Narmada and the Tapi which flow through the rift valley are, however, exceptions.

Q 86.B

- From the values of latitude, it is understood that the southern part of the country lies within the tropics and the northern part lies in the sub-tropical zone or the warm temperate zone. **Hence, statement 1 is not correct**.
- From the values of longitude, it is quite discernible that there is a variation of nearly 30 degrees, which causes a time difference of nearly two hours between the easternmost and the westernmost parts of our country. **Hence, statement 2 is correct.**

Q 87.A

- Saline soil is formed due to capillary action which leads to deposition of salts on the upper layer of soil, making it 'saline'. **Hence, statement 1 is not correct**. They occur in arid and semi-arid regions and in waterlogged and swampy areas. Their structure ranges from sandy to loamy. Saline soil is also known as 'Usara' soil. **Hence, statements 2 and 3 are correct**.

Q 88.B

- **Statements 1 and 2 are correct:** The western cyclonic disturbances enter the Indian subcontinent from the west and the northwest during the winter months. they originate over the Mediterranean Sea . These cyclonic disturbances are brought into India by the westerly jet stream.
- **Statement 3 is not correct:** An increase in the prevailing night temperature generally indicates the arrival of these cyclones disturbances.

Q 89.C

- **Tropical Evergreen Forests** -These forests are found in the **western slope of the Western Ghats**, **hills of the northeastern region (including khasi hills)** and the **Andaman and Nicobar Islands.**
- **Dry Deciduous Forests** - These forests are found in **rainier areas of the Peninsula and the plains of Uttar Pradesh and Bihar**. In the higher rainfall regions of the Peninsular plateau and the northern Indian plain.
- **Moist Deciduous Forests** - These forests are found in the **northeastern states along the foothills of Himalayas, eastern slopes of the Western Ghats and Odisha.**

Q 90.A

- **All the options are correct.**
- The Indus receives a number of Himalayan tributaries such as the Shyok, the Gilgit, the Zaskar, the Hunza, the **Nubra**, the Shigar, the Gasting and the **Dras**. It finally emerges out of the hills near Attock where it receives the **Kabul river on its right bank**. The other important tributaries joining the right bank of the Indus are the Khurram, the Tochi, the Gomal, the Viboa and the Sangar. They all originate in the Sulaiman ranges. The river flows southward and receives 'Panjnad' a little above Mithankot. The Panjnad is the name given to the five rivers of Punjab, namely the Satluj, the Beas, the Ravi, the Chenab and the Jhelum. It finally discharges into the Arabian Sea, east of Karachi. The Indus flows in India only through the Leh district in Jammu and Kashmir.

Q 91.A

- **Statements 1 and 2 are correct.** Temperature decreases from equator to pole because of decreasing trend of insolation. Oceans in southern hemisphere receive less heat due to their less contact with land and thus remain cool.
- **Statement 3 is not correct.** Winds blowing from land to sea decrease the sea surface temperature near coast by removing the warm surface waters and causing upwelling of cold waters.

Q 92.C

- Youth Stage - Streams flow over original slopes showing shallow V-shaped valleys with no floodplains or with very narrow floodplains along trunk streams. Meanders if present develop over these broad upland surfaces. These meanders may eventually entrench themselves into the uplands. Waterfalls and rapids may exist where local hard rock bodies are exposed. **Hence, statement 2 is correct.**
- Statements 1 and 3 refer to old stage of running water. Typical of the **middle** and lower **course of a river, the** vertical erosion is replaced by a sideways form of erosion called lateral erosion, plus deposition within the floodplain.

Q 93.B

- **Statement 1 is not correct**: A high pressure centre develops in the region lying to the north of the Himalayas during winter. This centre of high pressure gives rise to the flow of air at the low level from the north towards the Indian subcontinent.
- **Statement 2 is correct**: In winter months, the weather conditions over India are generally influenced by the distribution of pressure in Central and Western Asia. The surface winds blowing out of the high pressure centre over Central Asia reach India in the form of a dry continental air mass. These continental winds come in contact with trade winds over northwestern India.

Q 94.D

- The Chota Nagpur Plateau is a plateau in eastern India, which covers much of Jharkhand state as well as adjacent parts of Odisha, West Bengal, Bihar and Chhattisgarh. The Indo-Gangetic plain lies to the north and east of the plateau, and the basin of the Mahanadi River lies to its south.

Q 95.C

- Shevaroy Hills are a towering mountain range (1620 m) near the town of Salem, in Tamil Nadu state. They form part of the southern ranges of the Eastern Ghats System. Shevaroys cover an area of 400 square kilometres (99,000 acres), with plateaus from 4,000–5,000 feet (1,200–1,500 m) above sea-level.

Q 96.C

- **Statement 1 is correct.** Solar eclipses can only occur during a new Moon, when the Moon moves between the Earth and the Sun and the three celestial bodies form a straight line: Earth - Moon - Sun. A lunar eclipse occurs when the Earth comes between the Sun and the Moon and blocks the Sun's rays from directly reaching the Moon. Lunar eclipses only happen at full Moon.
- **Statement 2 is correct**. Lunar eclipses occur when the Moon passes through the Earth's shadow. This happens only during a full moon, when the Moon is on the far side of the Earth from the Sun. Because the shadow cast by the Earth is quite a bit larger than the Moon, lunar eclipses are more common than solar eclipses, and totality can last for about an hour.

Q 97.C

- **Statement 1 is correct:** Both fresh water and salt water lakes are present. Some of the important fresh lakes such as Dal and Wular and salt water lakes such as Pangong Tso and Tso Moriri are also in the region.
- **Statement 2 is correct:** Jhelum in the valley of Kashmir is still in its youth stage and yet forms meanders - a typical feature associated with the mature stage in the evolution of fluvial land form. The meanders in Jhelum river are caused by the local base level provided by the erstwhile larger lake of which the present Dal Lake is a small part.

Q 98.C

A tectonic plate (also called lithospheric plate) is a massive, irregularly-shaped slab of solid rock, generally composed of both continental and oceanic lithosphere.

The major plates are as follows:

- Antarctica and the surrounding oceanic plate
- North American (with western Atlantic floor separated from the South American plate along the Caribbean islands) plate
- South American (with western Atlantic floor separated from the North American plate along the Caribbean islands) plate
- Pacific plate
- India-Australia-New Zealand plate
- Africa with the eastern Atlantic floor plate
- Eurasia and the adjacent oceanic plate.

Some important minor plates are:

- **Cocos plate**: Between Central America and Pacific ocean. **Hence, pair 3 is correct.**
- **Nazca plate**: Between South America and Pacific ocean. **Hence, pair 1 is correct.**
- **Arabian plate:** Mostly the Saudi Arabian landmass.
- **Philippine plate:** Between the Asiatic and Pacific ocean.
- **Caroline plate**: Between the Philippine and Indian plate (North of New Guinea).
- **Fuji plate:** North-east of Australia.
- **Scotia plate** (SCO) is an almost entirely submerged plate underneath the Scotia Sea, near Antarctica. **Hence, pair 2 is not correct.**

Q 99.B

- **Minicoy, locally known as Maliku is the southernmost atoll of the archipelago of Lakshadweep, India. Administratively, it is a census town in the Indian union territory of Lakshadweep. It is geographically closest to mainland of India.**
- Barren Island is an island located in the Andaman Sea, dominated by Barren Volcano, the only confirmed active volcano in South Asia.
- Reunion Island is a region of France in the Indian Ocean, east of Madagascar and 175 kilometres (109 mi) southwest of Mauritius.
- The Chagos Archipelago or Chagos Islands is a group of seven atolls comprising more than 60 individual tropical islands in the Indian Ocean about 500 kilometres south of the Maldives archipelago.

Q 100.A

- The decrease in temperature with increasing altitude leads to a corresponding change in natural vegetation. The Himalayan ranges show a succession of vegetation from the tropical to the tundra, which change in with the altitude. Deciduous forests are found in the foothills of the Himalayas. It is succeeded by the wet temperate type of forests. **Hence, statement 1 is correct.**
- Dry deciduous forest covers vast areas of the country, where rainfall ranges between 70 -100 cm. On the wetter margins, it has a transition to the moist deciduous, while on the drier margins to thorn forests. These forests are found in rainier areas of the Peninsula and In the higher rainfall regions of the Peninsular plateau and the northern Indian plain. **Hence, statement 2 is not correct.**