

Q.1) "It is an erosional plain found in arid areas. Inselbergs are a distinguishing feature of these plains." The above statement is a description of:

- a) Peneplain
- b) Pediplain
- c) Structural plain
- d) Coastal plain

Q.1) Solution: (b)

Explanation:

- **Peneplain:** It is an erosional plain carved by the agents of erosion. Rivers, rain, ice, and wind help to smooth out the irregularities of the earth's surface. They are almost plain hence called a peneplain.
- **Pediplain:** It is also an erosional plain. Mechanical weathering in arid and semi-arid areas wears back the mountain slopes to leave gently sloping pediments or pediplains, but some steep hills remain which are called inselbergs. Hence option (b) is the correct answer.
- **Structural plains:** These are structurally depressed areas of the world that make up some of the most extensive natural lowlands on the earth's surface. They are formed by horizontally bedded rocks, relatively undisturbed by the crustal movements of the earth. They include such great plains as the Russian Platform, the Great plains of the U.S.A., and the central lowlands of Australia.
- **Coastal plains:** These are depositional plains. In coastal regions, waves and winds often drive beach materials, mud, sand, or shingle landwards and deposit them on the coastal plain to form marine swamps, mud-flats, tidal and estuarine lowlands.

Q.2) Consider the following statements with respect to Oyashio current:

1. It is a warm current starting off the coast of Japan and flows northwards.
2. It is a part of North Pacific Ocean gyre.

Which of the statements given above is/are correct?

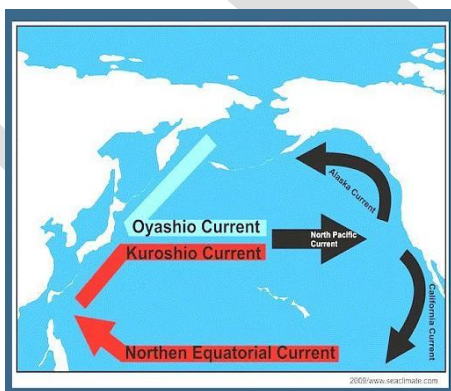
- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.2) Solution: (b)

Explanation:

The Oyashio Current or the Kurile Current is a subarctic **cold ocean current that travels south** and loops counter clockwise in the western North Pacific Ocean. The waters of the Oyashio Current start in the Arctic Ocean and flow southward across the Bering Sea. Hence **statement 1 is incorrect**.

- It is part of the North Pacific Ocean gyre. Hence, **statement 2 is correct**.
- An ocean gyre is a large system of circular ocean currents formed by global wind patterns and forces created by Earth's rotation. The movement of the world's major ocean gyres helps drive the ocean conveyor belt. The ocean conveyor belt circulates ocean water around the entire planet.



Q.3) With reference to Karewas formation, which of the following statements is/ are correct?

1. They are found in the southern region of India.
2. They are thick deposits of alluvial brought down by the rivers.

3. They are useful for the cultivation of saffron.

Select the correct answer from the codes given below:

- a) Only 1 statement is correct.
- b) Only 2 statements are correct.
- c) All 3 statements are correct.
- d) None of the statements are correct.

Q.3) Solution: (a)

Explanation:

The Kashmir Himalayas are famous for Karewa formations. Karewas are the thick deposits of glacial clay (not alluvial deposits) and other materials embedded with moraines. The Karewas are useful for the cultivation of Zafran, which is a local variety of saffron. **Hence statement 3 is correct and other statements are incorrect.**

Q 4. Consider the following pairs:

Sr.no.	Name of Discontinuity	Layers between which it exists
1.	Guttenberg discontinuity	between the Earth's crust and the mantle.
2.	Conrad discontinuity	between the upper mantle and the lower mantle
3.	Mohorovicic discontinuity	between the upper and lower crust
4.	Repetti discontinuity	between the outer core and the inner core

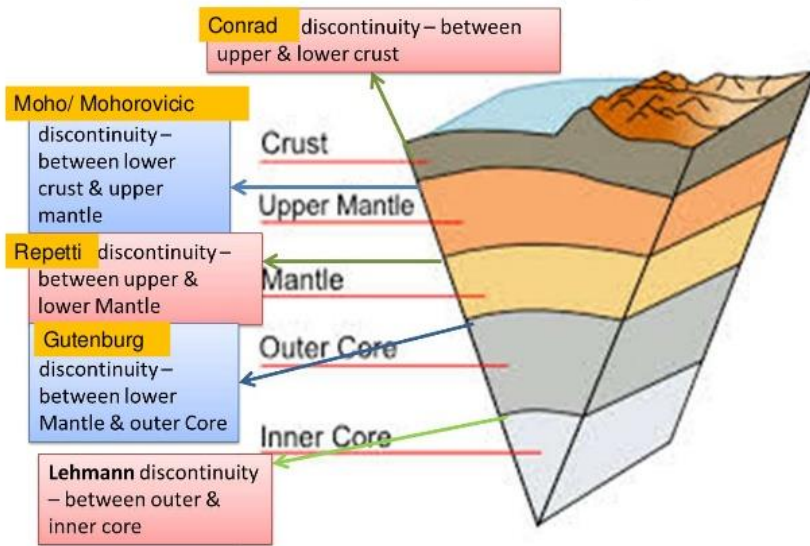
Which of the above pairs are correctly matched?

- a) Only 1 pair is correct.
- b) Only 2 pairs are correct.
- c) All 4 pairs are correct.
- d) None of the pairs are correctly matched

Q.4) Solution: (d)

Explanation:

Seismic Discontinuity



Q.5) Consider the following statements regarding P-waves:

1. P-waves vibrate parallel to the direction of the wave while all other waves vibrate perpendicular to the direction of wave.
2. P-waves travel through all mediums unlike S-waves.
3. P-waves are similar to sound waves.

Which of the above statements is/are correct?

- a) Only 1
- b) Only 1 and 2
- c) Only 2 and 3
- d) 1, 2 and 3

Q.5) Solution: (d)

Explanation:

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.

- 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**. **P-waves vibrate parallel to the direction of the wave**. Other three waves vibrate perpendicular to the direction of propagation.
 - 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. This characteristic of the S-waves is quite important. It has helped scientists to understand the structure of the interior of the earth. Reflection causes waves to rebound whereas refraction makes waves move in different directions. The surface waves are the last to report on seismograph. These waves are more destructive. They cause displacement of rocks, and hence, the collapse of structures occurs.

Q.6) Consider the following statements:

1. Rocks closer to the mid-oceanic ridges are the youngest.
2. The ocean crust rocks are much older than the continental rocks.
3. Mid-oceanic ridges has quake foci near to its surface.

How many of the above statements is/are correct?

- a) Only 1 statement is correct.
- b) Only 2 statements are correct.
- c) All 3 statements are correct.
- d) None of the statements are correct.

Q.6) Solution: (b)

Explanation:

The mapping of the ocean floor and palaeomagnetic studies of rocks from oceanic regions revealed the following facts:

- (i) It was realised that all along the mid-oceanic ridges, volcanic eruptions are common and they bring huge amounts of lava to the surface in this area.
- (ii) The rocks equidistant on either side of the crest of mid-oceanic ridges show remarkable similarities in terms of period of formation, chemical compositions and magnetic properties. **Rocks closer to the mid-oceanic ridges have normal polarity and are the youngest.** The age of the rocks increases as one moves away from the crest. **Statement 1 is correct.**
- (iii) **The ocean crust rocks are much younger than the continental rocks.** The age of rocks in the oceanic crust is nowhere more than 200 million years old. Some of the continental rock formations are as old as 3,200 million years. Thus, **statement 2 is incorrect.**
- (iv) The sediments on the ocean floor are unexpectedly very thin. Scientists were expecting, if the ocean floors were as old as the continent, to have a complete sequence of sediments for a period of much longer duration. However, nowhere was the sediment column found to be older than 200 million years.
- (v) The deep trenches have deep-seated earthquake occurrences while **in the mid-oceanic ridge areas, the quake foci have shallow depths i.e., it is near to the surface.** So, **statement 3 is correct.**

Q.7) Which of the statements given below are correct?

1. If molten material is cooled slowly at great depths, mineral grains may be small and smooth.
2. Igneous rocks are the only primary rocks.

Select the correct answer from the code given below:

- a) Only 1
- b) Only 2
- c) Both 1 and 2

d) None of them

Q.7) Solution: (b)

Explanation:

When magma in its upward movement cools and turns into solid form it is called igneous rock. The process of cooling and solidification can happen in the earth's crust or on the surface of the earth. If molten material is cooled slowly at great depths, mineral grains may be very large. Sudden cooling (at the surface) results in small and smooth grains.

- Granite, gabbro, pegmatite, basalt, volcanic breccia and tuff are some of the examples of igneous rocks.
- If molten material is cooled slowly at great depths, mineral grains may be very large. Sudden cooling (at the surface) results in small and smooth grains. Granite, gabbro, pegmatite,
- **Igneous rocks are primary rocks** and other rocks (sedimentary and metamorphic) form from these primary rocks.

Q.8) Consider the following statements:

1. Mass movements are aided by gravity and no geomorphic agents participate in the process of mass movements.
2. Mass movement is a special type of erosion as there is a shift of materials from one place to another.
3. Weathering is not a pre-requisite for mass movement.

Which of the above statements is/are correct?

- a) Only 1 and 2
- b) Only 2 and 3
- c) Only 1 and 3
- d) 1, 2 and 3

Q.8) Solution: (c)

Explanation:

- Mass movements transfer the mass of rock debris down the slopes under the direct influence of gravity. The movements of mass may range from slow to rapid, affecting shallow to deep columns of materials and include creep, flow, slide and fall.
- Gravity exerts its force on all matter, both bedrock and the products of weathering. So, **weathering is not a pre-requisite for mass movement** though it aids mass movements. Mass movements are very active over weathered slopes rather than over unweathered materials. Hence, **statement 3 is correct.**
- **Mass movements are aided by gravity and no geomorphic agent** like running water, glaciers, wind, waves and currents **participate in the process of mass movements.** That means **mass movements do not come under erosion** though there is a shift (aided by gravity) of materials from one place to another. Hence, **statement 1 is correct** but **statement 2 is incorrect.**

Q 9. With reference to the physical and chemical characteristics of the soil, which of the following statements is not correct?

- In a loam soil, clay, silt and sand are found in equal proportions.
- Lime in soil helps to preserve structural stability in soils.
- A slightly basic pH is regarded as the most favourable for the growth of cereal crops.
- In humid climates, greyish or bluish colours reflect bad drainage conditions.

Q.9) Solution: (c)

Explanation:

- The texture of soil refers to the sizes of the solid particles composing the soil. The sizes range from gravel to clay. The proportions of the different sizes present vary from soil to soil and from layer to layer. Standard soil textural classes can be defined according to the ratio of sand, silt and clay, and a **loam is a soil in which all the grades are present in equal proportions.**
- **Lime helps to preserve structural stability in soils.**

- **A slightly acidic pH of about 6.5 is normally regarded as the most favourable for the growth of cereal crops. Hence, statement c is incorrect.**
- Reddish colours in soils are associated with the presence of ferric compounds and usually indicate that the soil is well drained, although locally the colour may be derived from a red-coloured parent material.
- **In humid climates, greyish or bluish colours indicates poor drainage conditions.**

Q.10) With reference to Sheet Erosion, consider the following statements:

1. It takes place on level lands after a heavy shower.
2. It removes more fertile topsoil and is easily detectable.
3. It leads to the formation of badland topography.

Which of the statements given above are incorrect?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Q.10) Solution: (b)

Explanation:

- Water erosion in India takes place mainly in the form of sheet and gully erosion.
- Sheet erosion takes place on level lands after a heavy shower. Hence, statement 1 is correct.
- The soil removal is not easily noticeable. But it is harmful since it removes the finer and more fertile topsoil. Hence, statements 2 is incorrect.
- Gully erosion is common on steep slopes. Gullies deepen with rainfall, cut the agricultural lands into small fragments and make them unfit for cultivation. A region with a large number of deep gullies or ravines is called a badland topography. Hence, statement 3 is incorrect.

Q. 11) Which of the following are erosional landforms made by winds?

1. Pediplain
2. Alkali flats
3. Sand dunes
4. Pediments

Select the correct answer from the codes given below:

- a) Only 1, 2 and 3
- b) Only 2, 3 and 4
- c) Only 1, 2 and 4
- d) Only 1, 3 and 4

Q.11) Solution: (c)

Explanation:

The wind action creates a number of interesting erosional and depositional features in the deserts.

Erosional Landforms

- Pediments and Pediplains
- Playas or Alkali Flats
- Deflation hollows and caves
- Mushroom, Table and Pedestal Rocks

Depositional Landforms

- Dry hot deserts are good places for sand dune formation.
- There can be a great variety of dune forms.
 - **Crescent shaped dunes called barchans** with the points or wings directed away from wind direction i.e., downwind, form where the wind direction is constant and moderate and where the original surface over which sand is moving is almost uniform.
 - **Parabolic dunes** form when sandy surfaces are partially covered with vegetation. That means parabolic dunes are reversed barchans with wind direction being the same.

- **Seif** is similar to barchan with a small difference. Seif has only one wing or point. This happens when there is shift in wind conditions. The lone wings of seifs can grow very long and high.
- **Longitudinal dunes** form when supply of sand is poor and wind direction is constant. They appear as long ridges of considerable length but low in height.
- **Transverse dunes** are aligned perpendicular to wind direction. These dunes form when the wind direction is constant and the source of sand is an elongated feature at right angles to the wind direction.

Q. 12) Consider the following statements:

1. Air masses have vertically uniform characteristics.
2. Air masses are not influenced by prevailing winds.

Which of the above statements is/are correct?

- a) Only 1
- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.12) Solution: (d)

Explanation:

- The air with distinctive characteristics in terms of temperature and humidity is called an airmass. It is defined as a large body of air which is **horizontally uniform** in temperature and moisture. Hence, **statement 1 is incorrect.**
- The **direction of prevailing winds determines which type of air mass usually moves** over an area. For example, a west wind might bring warm moist air from over an ocean. An east wind might bring cold dry air from over a mountain range. Hence, **statement 2 is incorrect.**
- The air masses carry atmospheric moisture from oceans to continents and cause precipitation over landmasses.

Q.13) Consider the following statements regarding fronts:

1. Frontogenesis is influenced by Coriolis effect only in the Southern hemisphere due to less number of obstacles on surface leading to larger air masses.
2. Occluded front is caused due to divergence of air-masses.
3. The cold front being heavier moves slower than the warm front.

Which of the above statements is/are correct?

- a) Only 1 and 2
- b) Only 2 and 3
- c) 1, 2 and 3
- d) None of the Statements are correct.

Q.13) Solution: (d)

Explanation:

- When two different air masses meet, the boundary zone between them is called a front. The process of formation of the fronts is known as frontogenesis. The fronts occur in middle latitudes and are characterised by steep gradient in temperature and pressure. They bring abrupt changes in temperature and cause the air to rise to form clouds and cause precipitation.
- In northern hemisphere Frontogenesis happens in anti-clockwise direction and in southern hemisphere, it happens in clockwise direction. This is due to Coriolis effect. Hence, **Statement 1 is not correct.**
- There are four types of fronts: (a) Cold; (b) Warm; (c) Stationary; (d) Occluded.
 - **Stationary front:** In this type two air masses having contrasting physical properties rest against each other without showing any major movement.
 - **Warm front:** If the warm air mass moves towards the cold air mass, the contact zone is a warm front. When a warm air mass collides against the cold air mass, it rises above the cold air mass which is relatively heavier and denser. Due to this, condensation takes place gradually. It leads to nimbostratus, altostratus, and cirrostratus cloud formation

and produces **moderate to gentle precipitation over a relatively large area for several hours.**

- **Cold front:** Here, cold air mass moves towards warm air mass. The warm air mass is thus made to rise rapidly. Cumulonimbus clouds are formed and heavy rainfall with lightning and thundering, snowfall, hail storms, etc is observed.
- **Occluded front:** If an air mass is fully lifted above the land surface, it is called the occluded front. **This is also due to convergence of air masses and not divergence of air mass. Hence, statement 2 is incorrect.** Here, the **cold front moves faster than the warm front** ultimately overtaking the warm front. Hence, **statement 3 is incorrect.**

Q. 14) These are black or dark grey clouds present 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. They are treated as shapeless masses of thick vapour.

Which of the following types of clouds is described in the above passage?

- a) Cirrus
- b) Cumulus
- c) Nimbus
- d) Stratus

Q. 14) Solution: (c)

Explanation:

- **Cumulus:** This is a vertical cloud with a rounded top and horizontal base, typical of humid tropical regions, associated with up-rising convectional currents. Its great white globular masses may look grey against the sun but it is a fair-weather cloud.
- **Cirrus:** This looks fibrous like cotton wool in the blue sky. They exist in patches and can be seen scattered here and there and have a flat base. It indicates fair weather and often gives a brilliant sunset.

- **Nimbus:** It is also known as a 'rain cloud'. It brings continuous rain, snow or sleet. In case of cumulonimbus, its black and white globular masses can be seen in a range of shapes and is frequently seen in tropical afternoons. When its cauliflower top spreads out like an anvil, it is also referred to as a 'thunder-cloud' and brings convectional rain, accompanied by lightning and thunder.
- **Stratus:** 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.

Q. 15) The formation of cyclones is lesser during southwest monsoon. Why?

- a) The temperature of oceanic surface reduces post monsoon rainfall.
- b) The ITCZ having shifted northwards hinders cyclone formation
- c) Strong vertical wind shear due to easterly jet stream.
- d) Lack of divergence of air in upper troposphere.

Q.15) Solution: (c)

Explanation:

- The southwest monsoon is characterized by the presence of strong easterly winds in the upper troposphere (above 9 km). This results in large vertical wind shear. Strong vertical wind shear inhibits cyclone development.
- During this season, the low-pressure systems up to the intensity of depressions can form along the monsoon trough (ITCZ), which extends from northwest India to the north Bay of Bengal. These systems make landfall very quickly which is also one of the reasons for their non-intensification into intense cyclones.
- As per recent studies, Ocean warming is increasing the chances of cyclone formation in the Indian seas, close to the monsoon onset and withdrawal periods.

Q 16) In climatology, 'Blocking Highs' are used to refer to:

- a) Mountains that cause orographic rainfall
- b) Very slow anti-cyclones
- c) Severe cyclones in higher latitudes
- d) Stratospheric clouds that block the formation of ozone

Q.16) Solution: (b)

Explanation:

- Anti-cyclones are high pressure systems. Areas of high pressure can sometimes be very slow moving, almost stationary. Such a region of slow-moving air can prevent other, faster moving pressure systems from moving into a region. They are known as **'blocking highs' or blocking anticyclones because they obstruct the flow of temperate cyclones in mid-latitudes.**
- The region beneath a blocking high often experiences the same kind of weather for a long period (perhaps as long as several weeks) and can also led to prolonged droughts.
In Europe, for example, blocking highs over Western, Russia, Eastern Europe and Scandinavia have caused long, severe winters.

Q. 17) Precipitation in this climate type is well distributed throughout the year with a winter maximum. It is characterised by moderately warm summers and mild winters. It is under the influence of the Westerlies all-round the year. Lumbering is a profitable economic activity here.

Which of the following climatic zones matches the above description?

- a) Siberia type climate
- b) Gulf type climate
- c) British type climate
- d) Savannah type climate

Q.17) Solution: (c)

Explanation:

British type climate:

- The cool temperate western margins are under **the influence of the Westerlies all-round the year.**
- **Moderately warm summers and fairly mild winters.** This type of climate is typical to Britain.
- **Rainfall occurs throughout the year with winter maxima.**
- The seasons are distinct.
- The natural vegetation of this climatic type is **deciduous forest.** The trees shed their leaves in the cold season.
- **Lumbering, Industrialization, Market gardening, animal husbandry, mixed farming,** etc are favourable in this climate.

Q.18) "This geographic region is characterised by Warm and dry climate and Mild and wet winters. It experiences dry summers due to shift of westerlies. The vegetation here is sclerophyllous (resistant to heat and dryness). Orchard farming is the predominant occupation".

Which of the following geographical region has been described in the passage given above?

- a) Central Asian region
- b) Equatorial region
- c) Atlantic Coast of North America
- d) Mediterranean region

Q. 18) Solution: (d)

Explanation:

Mediterranean type of climate is associated with all the given features given below:

- The most outstanding feature of the Mediterranean climate is the **winter rain**. The basic cause of this type of climate is the **shifting of the wind belts**. The precipitation during winter is due to **Westerlies**.
- **Mean annual precipitation** ranges from **35 – 90 cm**.
- **Climate is not extreme** because of cooling from water bodies.
- The **rain comes in heavy showers** and only on a few days with **bright sunny periods between them**.
- **Sirocco and Mistral** are local winds.
- **Trees with small broad leaves are widely spaced and never very tall**. The absence of shade is a distinct feature of Mediterranean lands.
- Plants are in a continuous struggle against heat, dry air, excessive evaporation and prolonged droughts. The plants are **sclerophyllous**. Bushes and shrubs are the most predominant.
- The Mediterranean lands are also known as the **world's orchard lands**. They are famous for producing citrus fruits, olives, etc. **Viticulture** is by tradition a Mediterranean occupation.

Q. 19) Consider the following statements with respect to temperature of ocean water:

1. Only one layer of cold water exists from surface to deep ocean floor in the Arctic and Antarctic circles.
2. The highest temperature of the oceans is not recorded at the equator.
3. Onshore winds decrease the temperature of the ocean near the coast.

Which of the above statements are correct?

- a) Only 1 and 2
- b) Only 2 and 3
- c) Only 3
- d) Only 2

Q.19) Solution: (a)

Explanation:

- The temperature structure of oceans over middle and low latitudes can be described as a three-layer system from surface to the bottom. The first layer represents the top layer of warm oceanic water and it is about 500m thick with temperatures ranging between 20° and 25° C. This layer, within the tropical region, is present throughout the year but in mid latitudes it develops only during summer.
- The second layer called the thermocline layer lies below the first layer and is characterised by rapid decrease in temperature with increasing depth. The thermocline is 500 -1,000 m thick.
- The third layer is very cold and extends upto the deep ocean floor.
- In the Arctic and Antarctic circles, the surface water temperatures are close to 0° C and so the temperature change with the depth is very slight. Here, only one layer of cold water exists, which extends from surface to deep ocean floor. Hence, **statement 1 is correct.**
- The average temperature of surface water of the oceans is about 27°C and it gradually decreases from the equator towards the poles. The rate of decrease of temperature with increasing latitude is generally 0.5°C per latitude. The average temperature is around 22°C at 20° latitudes, 14° C at 40° latitudes and 0° C near poles. The oceans in the northern hemisphere record relatively higher temperature than in the southern hemisphere. The **highest temperature is not recorded at the equator but slightly towards north of it.** Hence, **statement 2 is correct.**
- Prevailing wind is one of the factors affecting ocean temperature. The winds blowing from the land towards the oceans drive warm surface water away from the coast resulting in the upwelling of cold water from below. It results into the longitudinal variation in the temperature. Contrary to this, the **onshore winds pile up warm water near the coast and this raises the temperature. Hence, statement 3 is incorrect.**

Q.20) Consider the following statements with respect to Urban Heat Islands:

1. Urban Heat Island effect is due to increased albedo in urban areas.
2. Urban Heat Island effect further increases water and air pollution.

Which of the above statements is/are correct?

- a) Only 1

- b) Only 2
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.20) Solution: (b)

Explanation:

The Urban Heat Island occurs due to following reasons –

- **Low Albedo Materials:** Albedo is the ratio of the reflected solar energy to the incident solar energy. It depends on the arrangement of surfaces, materials, pavements, coatings, etc. Albedo has a direct impact on the formation of the microclimate.
- **Paved and Impermeable Surfaces:** Paved over surfaces, such as roads and parking lots, can absorb solar radiation as heat, and these surfaces are typically impermeable, which means that water runoff is redirected to the stormwater system rather than being absorbed by plants or water bodies that help cool the area through evapotranspiration and evaporation.
- **Dark Surfaces:** Dark roofs absorb more energy into the building as heat, hence the boom in cool roof adoption. But it's not just roofs absorbing the heat, but blacktop absorbs the sun rays just as well, and neither surface reflects much solar radiation, so they get hotter than lighter-coloured surfaces.
- **Lack of Vegetation:** Plants and trees provide shade and cool the air through evapotranspiration. But areas that are dominated by paved surfaces have little room for green space. Forests are wiped out on a massive scale to meet the demand of various urban facilities. Lesser trees mean less cooling efficiency.
- **Air Pollutants:** In urban areas, especially in city centres, air pollution is a major issue. Exhaust gases from vehicles, industrial pollutants released in the atmosphere, trap solar radiation, causing an increase in temperature, and the microclimate effect becomes stronger.
- **Urban Canopy:** In urban areas, there are multilayer buildings. The heat reflected by a building is trapped by the nearby taller buildings, which is known as the urban canopy. UHI is exacerbated by the formation of the urban canopy.

The following are the impacts of urban climate:

- **Increased Energy Consumption:** Increased temperatures during summer in cities amplify energy demand for air conditioning.
- Urban or cities are **hotspots of greenhouse gases**. As per UNEP, urban cities are responsible for 75% of global greenhouse gases.
 - Increased greenhouse gases cause global warming and climate change, while causing the **decline of air quality**. Sometimes the UHI can also lead to the formation of ground-level ozone and acid rain.
- **Secondary Impacts on Weather and Climate:** Besides the high-temperature increases, urban heat island (UHIs) can bring forth secondary effects on the local weather and climate. This includes changes in local wind patterns, the formation of fog and clouds, precipitation rates and humidity.

Q.21) Consider the following statements about United Nations Democracy Fund (UNDEF)

1. UNDEF was established in 2005 as a United Nations General Trust Fund to support democratization efforts around the world.
2. The large majority of UNDEF funds go to local civil society organizations, both in the transition and consolidation phases of democratization.
3. India is the fourth highest donor to the UN Democracy Fund.

Choose the correct statements:

- a) 1 and 2
- b) 2 and 3
- c) 1, 2 and 3
- d) 1 and 3

Q.21) Solution (c)

Explanation:

- **UNDEF was established in 2005** by UN Secretary-General Kofi A. Annan as a **United Nations General Trust Fund to support democratization efforts around the world. Hence statement 1 is correct.**
- UNDEF plays a unique role in complementing the UN's other work with governments to strengthen democratic governance around the world.

UNDEF's Mandate and Projects:

- UNDEF funds projects that empower civil society, promote human rights, and encourage the participation of all groups in democratic processes.
- UNDEF supports projects that strengthen the voice of civil society, promote human rights, and encourage the participation of all groups in democratic processes. **The large majority of UNDEF funds go to local civil society organizations – both in the transition and consolidation phases of democratization. Hence statement 2 is correct.**
- The Advisory Board of the UNDEF offers policy guidance and funding guidelines, considers proposals for funding, and recommends funding proposals for approval by the Secretary-General.
- UNDEF provides grants ranging from USD 100,000 to USD 300,000.

India's Support for UNDEF:

- India has contributed over USD 32 million since its inception (2005).
- **Top three donors are US, Sweden, and Germany.**
- In 2022, when **India contributed USD 150,000 to the fund, it was the fourth highest among 45 donors. Hence statement 3 is correct.**

Source: [CLICK HERE](#)

Q.22) Consider the following statements about Great Nicobar Island

1. Great Nicobar is the southernmost island of the Nicobar Islands Archipelago.
2. The island is home to the Shompen people, classified as a Particularly Vulnerable Tribal Group (PVTG).

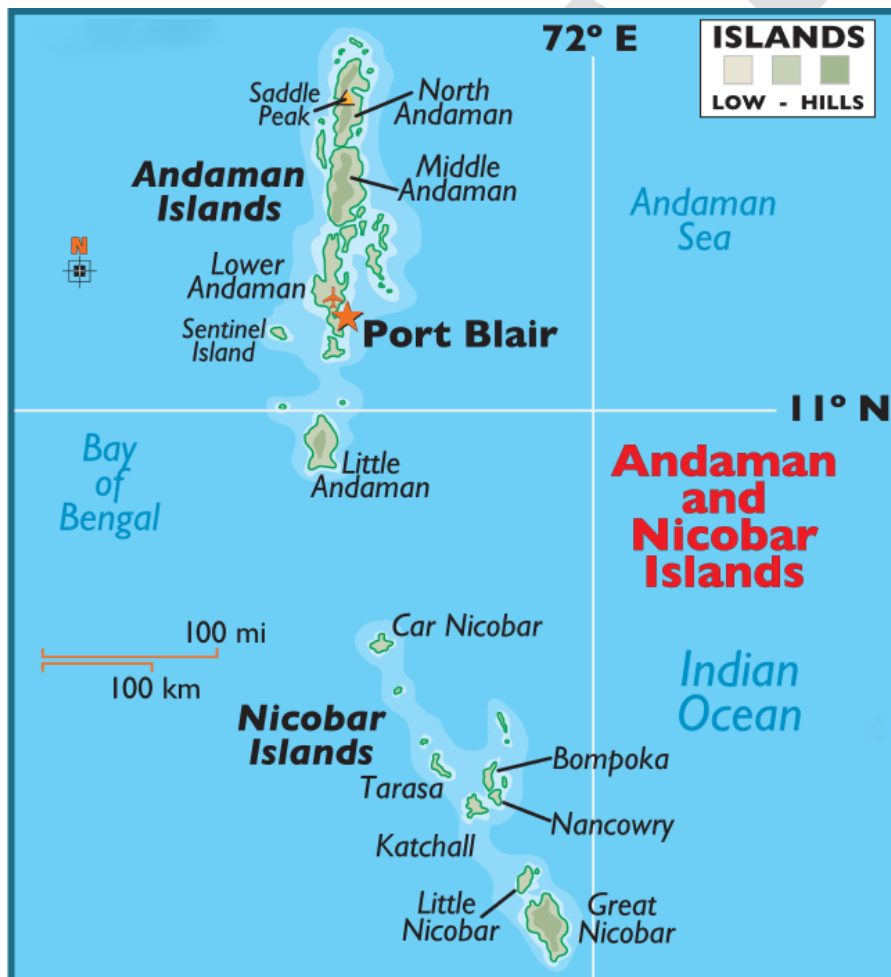
3. Duncan Passage separates Little Nicobar and Great Nicobar.

Choose the incorrect statements:

- a) 1 only
- b) 2 only
- c) 3 only
- d) 1 and 3

Q.22) Solution (c)

Explanation:



- **Great Nicobar is the southernmost island of the Nicobar Islands Archipelago. Hence statement 1 is correct.**
- It covers 1,03,870 hectares of unique and threatened tropical evergreen forest ecosystems.
- It is home to a very rich ecosystem, including 650 species of angiosperms, ferns, gymnosperms, bryophytes, among others.
- **The Mongoloid Shompen Tribe, about 200 in number, live in the forests of the biosphere reserve particularly along the rivers and streams. They are classified as a Particularly Vulnerable Tribal Group (PVTG). Hence statement 2 is correct.**
- They are hunters and food gatherers, dependent on forest and marine resources for sustenance.
- **The Duncan Passage is a strait in the Indian Ocean.** It is located between South Andaman and Little Andaman. Hence statement 3 is not correct.
- **Sombrero Channel divides the Car Nicobar and Great Nicobar in the Bay of Bengal.**

Source: [CLICK HERE](#)

Q.23) Consider the following statements about Dhawan II engine

1. It is a 3D-printed cryogenic engine.
2. It utilises two rocket propellants, liquid natural gas (LNG) and liquid oxygen (LoX).

Choose the correct statements:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.23) Solution (c)

Explanation:

- It is a **3D-printed cryogenic engine developed by the Skyroot Aerospace for its heavier vehicle, the Vikram II rocket. Hence statement 1 is correct.**

Features:

- It uses a 3D-printed torch igniter and bellows actuated cryo-injection valve with a quick response time.
- It **utilises two high-performance rocket propellants, liquid natural gas (LNG) and liquid oxygen (LoX)**, which require cryogenic temperatures (below -150° Celsius) for storage and operation. Hence statement 2 is correct.

Source: [CLICK HERE](#)

Q.24) With reference to 'Civil Liability for Nuclear Damage Act (CLNDA)', consider the following statements

1. The Act provides for strict and no-fault liability on the operator of the nuclear plant with a right of recourse
2. The Act clearly specifies that there is no limitation on the amount and time when action for compensation can be brought against the operator

Select the correct statement(s)

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Q.24) Solution (a)

Explanation:

- The CLNDA **provides for strict and no-fault liability on the operator of the nuclear plant**, where it will be held liable for damage regardless of any fault on its part.
- Section 17(b) of the CLNDA says that the operator of the nuclear plant, after paying their share of compensation, shall have the right of recourse where the nuclear incident has resulted as a consequence of an act of the supplier or his employee. **Hence statement 1 is correct.**
- Section 46 of CLNDA allows victims of a nuclear catastrophe to seek claims for damages against the operator or the supplier under criminal law, even though such legal actions fall beyond the purview of the CLNDA.
- However, the Act also **specifies the limitations on the amount and time when action for compensation can be brought against the operator. Hence statement 2 is not correct.**

Source: [CLICK HERE](#)

Q.25) 'Piarosoma arunachalensis', which was discovered recently belongs to a species of

- a) Reptiles
- b) Birds
- c) Moths
- d) Dragonflies

Q.25) Solution (c)

Explanation:

Piarosoma arunachalensis is a **moth species belonging to the genus Piarosoma**. The moth is a Burnet moth and is largely day-flying. It belongs to the family Zygaenidae, which includes Forester and Burnet moths.

Source: [CLICK HERE](#)

Q.26) Mr. Roshan has 3 timepieces in his house - a wall clock, an alarm clock and a wristwatch. The wristwatch is always accurate, whereas the wall clock gains 2 minutes every day and the alarm clock loses 2 minutes every day. At exactly midnight last night, all three watches were showing the same time. If today is 23 July 2007, then on which date all three clocks will show the same time again?

- a) 17 July 2008
- b) 23 July 2008
- c) 19 July 2008
- d) 24 Jan 2008

Q.26) Solution (a)

Explanation:

A clock finishes one round in 12×60 i.e. 720 minutes. If a clock gains 2 minutes every day, then it would be 720 minutes ahead after 360 days. Thus, after 360 days, it will show the same time again.

Similarly, if a clock loses 2 minutes every day, then it would be 720 minutes behind after 360 days. Thus, after 360 days, it will show the same time again. Thus, after 360 days all three clocks will show the same time again i.e. midnight between 17 July 2008 and 23 July 2008.

Hence, option 'a' is correct.

Q.27) There is a clock which loses 5 minutes after every hour. It shows correct time at 9 o'clock on Wednesday on 1st September. Among the following options, when will it show the correct time of 9 o'clock again?

- a) Friday, 10th September
- b) Tuesday, 14th September
- c) Monday, 13th September
- d) Monday, 6th September

Q.27) Solution (c)

Explanation:

Since the watch has to show correct time as 9, when it loses 12 hours

Time taken to lose 5 minutes = 1 hour

Time taken to lose 12 hours = $12 \times 60 / 5 = 144$ hours = 6 days

Starting from Wednesday, after 6 days it would be Tuesday 7th September.

After Tuesday 7th September, Monday (13th September) would occur after further 6 days.

Q.28) It was Tuesday on Feb 8, 2005. What was the day of the week on Feb 8, 2004?

- a) Monday
- b) Thursday
- c) Friday
- d) Sunday

Q.28) Solution (d)

Explanation:

The year 2004 was a leap year. So, it had 2 odd days.

The day on Feb 8, 2004 must be 2 days before the day on Feb 8, 2005.

Hence, this day was Sunday

Q.29) Two ants A and B start from a point P on a circle at the same time, with A moving clock-wise and B moving anti-clockwise. They meet for the first time at 10:00 am when A has covered 60% of the track. If A returns to P at 10:12 am, then B returns to P at

- a) 10:27 am
- b) 10:25 am
- c) 10:45 am
- d) 10:18 am

Q.29) Solution (a)

Explanation:

By the time A and B meet for the first time, A covers 60% of the distance, while B covers 40% of the distance.

So, the speeds of A and b are in the ratio 60:40 or 3:2

Hence, the time they take to cover a particular distance will be in the ratio 2:3

We know that A covers 60% of the distance at 10:00 AM and covers 100% of the distance at 10:12 AM.

That means A takes 12 minutes to cover 40% of the track. So to cover the entire track he must have taken $12+12+6 = 30$ minutes. (Because $40\% + 40\% + 20\% = 100\%$)

Since the time taken by A and B to complete the track are in the ratio 2:3, the time taken by B to complete the track will be 45 minutes.

At 10:00 AM, B has covered 40% of the track. If we can find out what time does B take to complete the remaining 60% of the track, we can find the finish time of B.

Time required to complete 60% of the track = 60% of 45 = 27 minutes.

Hence, B completes one single round at 10:27 AM.

Read the following passage and answer the item that follows. Your answer to these items should be based on the passages only.

Passage 1

The origin of water on Earth is linked to the formation of Earth. According to some currently accepted theories Earth began as a waterless mass of rock surrounded by a cloud of gas. Radioactive materials in the rock and increasing pressure in the Earth's interior gradually produced enough heat to melt the interior of the Earth. The heavy materials, such as iron ores, then sank. The light silicates (rocks made up of silicon and oxygen) rose to the Earth's surface and formed the earliest crust.

Many silicate rocks have water molecules integrated into their atomic arrangement – water can be driven out of such rocks by the action of heat. Thus, heating the Earth's interior caused the release of water in such rocks to the surface. Over millions of years, water thus released collected slowly in low places of the crust and formed the oceans. Whatsoever might have been the origin of water, Earth's original water supply is still in use and very little, if any, has been added during the past billion years. The same water has been pumped time and again from the oceans into the air, dropped down upon the lands, and transferred back to sea. A single drop of water spends 8 to 10 days passing through the air, 2 to 3 weeks in a river, as long as 100 years in a Himalayan Glacier or from 100 to 40,000 years underground.

Q.30) Consider the following statements with respect to the passage

1. Earth's original supply of water has ended and most of the water which is in current use has been added during the past billion years
2. The heating of the Earth's interior caused release of water contained radioactive materials in the rock

Choose the correct code:

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None of the above

Q.30) Solution (d)

Explanation:

The second paragraph of the passage tells that “Whatsoever might have been the origin of water, earth’s original supply of water is still in use and very little, if any, has been added during the past billion years or so.” And it also says that “the heating of the Earth’s interior caused release of water contained in such rocks to the surface” here such rocks means silicate rocks.

Hence, both the statements are incorrect.