Q.1) Which of the following evidence formed the basis for the "SeaFloor Spreading" hypothesis put forth by Harry Hess?

1. Young oceanic crust rocks compared to older continental rocks.
2. Deep earthquakes foci at mid-oceanic ridges.
3. Similar magnetic properties of rocks equidistant on either sides of the crest of mid-oceanic ridges.
4. Active volcanoes along continent-ocean margins.

Choose the correct option:

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

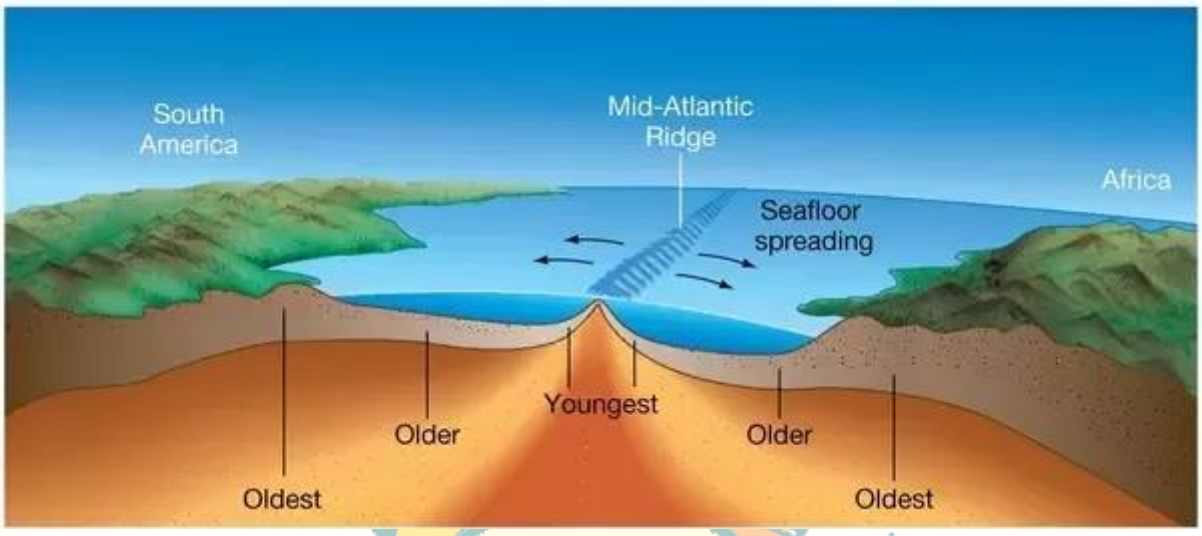
Q.1) Solution (b)

Explanation:

Sea-Floor Spreading:

- Seafloor spreading is a process that occurs at mid-ocean ridges, where new oceanic crust is formed through volcanic activity and then gradually moves away from the ridge.
- Seafloor spreading helps explain continental drift in the theory of plate tectonics.
- The hypothesis of seafloor spreading was forwarded by Harry Hammond Hess.
- The ocean floor that gets pushed due to volcanic eruptions at the crest, sinks down at the oceanic trenches and gets consumed. Hence the oceanic crust is simultaneously formed at the mid-oceanic ridge and consumed at oceanic trenches. Thus, ocean crust rocks are much younger than the continental rocks.
- The hypothesis was based on the following observations.
    1. All along the mid-oceanic ridges, volcanic eruptions are common and they bring a huge amount of lava to the surface.
    2. The rocks equidistant on either side of the ridges show remarkable similarities in terms of period of formation, chemical compositions and magnetic properties.
    3. 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.
    4. The sediments on the ocean floor are very thin.

5. The oceanic ridge areas have shallow earthquake foci while the deep trenches have deep seated foci.



Q.2) Which of the following are the examples of cold ocean currents?

1. Humboldt Current.
2. Kuroshio Current.
3. Falkland Current.
4. Labrador Current.

Choose the correct option:

a) 1 and 2
b) 1, 2 and 3
c) 1, 3 and 4
d) All of the above.

Q.2 Solution (c)

Basic Information:

List of Ocean Currents:

Warm Ocean Currents	Cold Ocean Currents
1. North Equatorial Current 2. Kuroshio Current	1. Humboldt or Peruvian Current 2. Kuril or Oyashio Current

3. North Pacific Current 4. Alaskan Current 5. Counter Equatorial Current, 6. El Nino Current 7. Tsushima Current 8. South Equatorial Current 9. East Australian Current 10. Florida Current 11. Gulf Stream 12. Norwegian Current 13. Irminger Current 14. Rannell Current 15. Antilles Current 16. Brazilian Current 17. Mozambique Current 18. Agulhas Current	3. California Current 4. Antarctica Current 5. Okhotsk Current 6. Labrador Current 7. Canary Current 8. Eastern Greenland Current 9. Benguela Current 10. Antarctica Current 11. Falkland Current 12. Somali Current 13. Western Australian Current

Q.3) Which of the following trenches are correctly matched with their location?

	Trench	**Ocean**
1.	Puerto Rico Trench	Pacific Ocean
2.	Sunda Trench	Indian Ocean
3.	Phillipine Trench	Indian Ocean
4.	Tonga Trench	Atlantic Ocean

Choose the correct option:

a) 2 only
b) 1 and 2
c) 2 and 3
d) All of the above.

Q.3) Solution (a)

Basic Information:

Ocean	Name of the trench
Pacific Ocean	Mariana Trench, Tonga Trench, Kurile Trench, Karmadec Trench, Phillipine Trench, Japan Trench, Peru-Chile Trench
Atlantic Ocean	Peurto-Rico Trench, South Sandwich Trench, Cayman Trench, Romanche trench, Norwegian trench.
Indian Ocean	Sunda Trench, Diamantia trench, sumatra trench.

Q.4) With respect to the Coriolis force consider the following statements.

1. Coriolis force is maximum at the equator and decreases towards poles.
2. Coriolis changes both the speed and direction of the object.

Which of the above statements is/are correct?

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

Q.4) Solution (d)

Basic Information:

Coriolis effect: It is a deflecting force experienced due to rotation of earth. Because of coriolis the air appears to turn towards its right in the northern hemisphere and towards its left in the southern hemisphere. The coriolis always acts in the perpendicular direction of the motion of air. It is zero at the equator and increases towards the poles.

The following are four basic points to remember about the Coriolis effect:

1. Regardless of the initial direction of motion, any freely moving object appears to deflect to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.
2. The apparent deflection is strongest at the poles and decreases progressively toward the equator, where the deflection is zero.

3. The Coriolis effect is proportional to the speed of the object, and so a fast-moving object is deflected more than a slower one.
4. The Coriolis effect influences direction of movement only; it does not change the speed of an object.

Statement Analysis:

Statement 1	Statement 2
Incorrect	**Incorrect**
Coriolis effect is maximum at the poles and decreases towards the equator.	Coriolis force only changes the direction of movement and not the speed of an object.

Q.5) With respect to the ocean deposits consider the following statements.

1. Red Clay is found prominently at the continental shelf area.
2. Oozes are mud which contain shells and skeletons of marine organisms.

Choose the correct option:

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

Q.5) Solution (b)

Basic Information:

The ocean deposits can broadly be divided into two types:

1. The terrigenous deposits: These are found on the continental shelves and slopes and mainly consist of the rock material derived because of wear and tear.
2. The pelagic deposits: These are found over deep sea plains. These deposits mainly consist of organic remains of plants and animals.

1. Terrigenous Deposits:

- Terrigenous deposits are derived from the wear and tear of land and volcanic and organic products found majorly in the continental slope and shelf areas.
- On the basis of size of particles, the terrigenous deposits may be categorised into three classes— mud, sand and gravel.

- Mud refers to the finest particles which comprise the minute particles of rock forming minerals, principally quartz. Mud deposits are classified into blue, green and red types, based on the colour of constituents.
- Sand refers to the coarser particles.
- Gravel has even bigger particles.

2. Pelagic deposits:

- Pelagic deposits comprise 75% of the total sea floor.
- Pelagic materials consist of both organic and inorganic materials.
- Organic materials are in the form of a kind of liquid mud, called ooze, which contains shells and skeletons of various marine organisms.
- The ooze is said to be calcareous when the shell is made of calcium carbonate. The calcareous ooze may be either pteropod ooze or globogerina ooze. When the shell is made of silica, the ooze is said to be siliceous ooze, which can be either the diatom type or the radiolarian type of ooze.
- Inorganic materials are in the form of red clay of volcanic origin. The chief constituents of red clay are silicon and aluminium dioxide, while other constituents include iron, manganese, phosphorus and radium. The red clay is the most widely spread pelagic deposit and covers 38% of the sea floor.

Statement Analysis:

Statement 1	Statement 2
Incorrect	**Correct**
Red Clay is found predominantly in deep sea floors.	Oozes mainly consist of organic remains of marine organisms.

Q.6) Consider the following statements with respect to the salinity distribution of oceans.

1. Salinity of the high pressure belts between 20 and 30 degrees in both the hemispheres is lower than the temperate regions.
2. Salinity at the surface of the ocean is greater than the salinity at the bottom.

Which of the above statements is/are correct?

a) 1 only
b) 2 only

c) 1 and 2
d) None of the above.

Q.6) Solution (d)

Basic Information:

Ocean salinity is majorly decided by following factors.

(i) The salinity of water in the surface layer of oceans depends mainly on evaporation and precipitation.
(ii) Surface salinity is greatly influenced in coastal regions by the freshwater flow from rivers, and in polar regions by the processes of freezing and thawing of ice.
(iii) Wind also influences the salinity of an area by transferring water to other areas.
(iv) The ocean currents contribute to the salinity variations. Salinity, temperature and density of water are interrelated. Hence, any change in the temperature or density influences the salinity of water in an area.

Statement Analysis:

Statement 1	Statement 2
Incorrect	**Incorrect**
The waters fringing the high pressure belts between 20 and 30 degree latitudes in both hemispheres have high salinity due to high rate of evaporation caused by high temperature and low humidity. The temperate oceans have lower salinity due to the lower temperature and a lower rate of evaporation.	The surface salinity is influenced by several factors like the rate of evaporation, inflow of the river waters, ocean currents etc. Hence, one cannot generally predict that surface salinity is always greater than the salinity at the bottom. It varies from place to place.

Q.7) What does the term "Brown Tide" refer to?

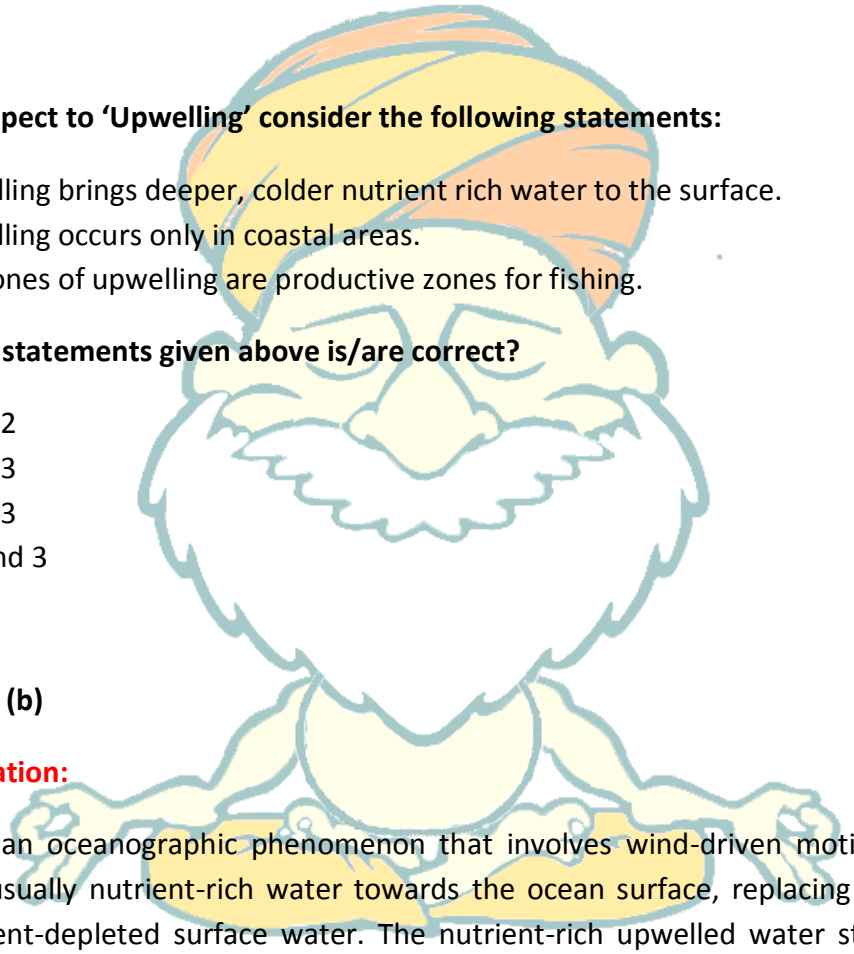
a) Harmful Algal Blooms
b) Upwelling of clay particles to the surface near the ocean margins.
c) High tides occurring during the equinox.

d) Incoming sand water near the coastal areas due to tsunami waves.

Q.7) Solution (a)

Explanation:

Brown tides are part of growing world-wide incidences of harmful algal blooms (HAB) which are caused by a proliferation of single-celled marine plants called phytoplankton. One species of phytoplankton, the microscopic alga Aureococcus anophagefferens may bloom in such densities that the water turns dark brown, a condition known as "Brown tide".



Q.8) With respect to 'Upwelling' consider the following statements:

1. Upwelling brings deeper, colder nutrient rich water to the surface.
2. Upwelling occurs only in coastal areas.
3. The zones of upwelling are productive zones for fishing.

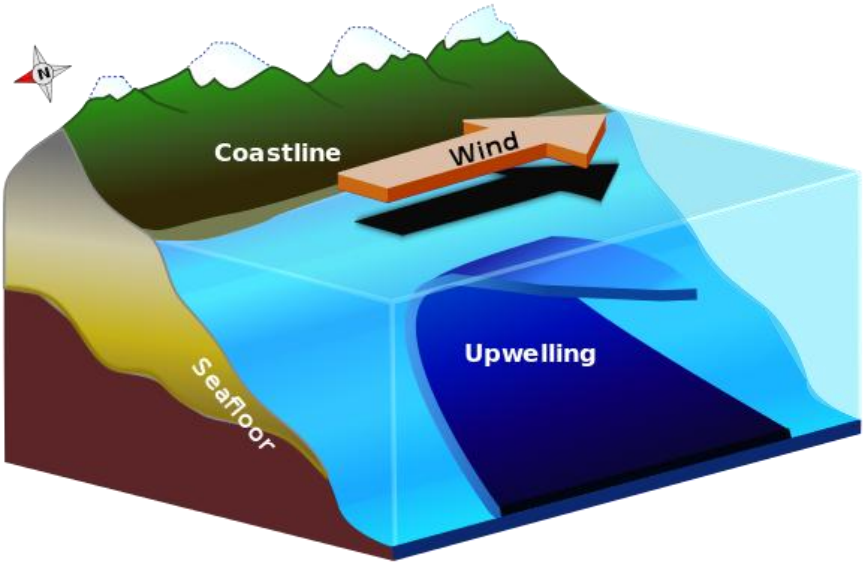
Which of the statements given above is/are correct?

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

Q.8) Solution (b)

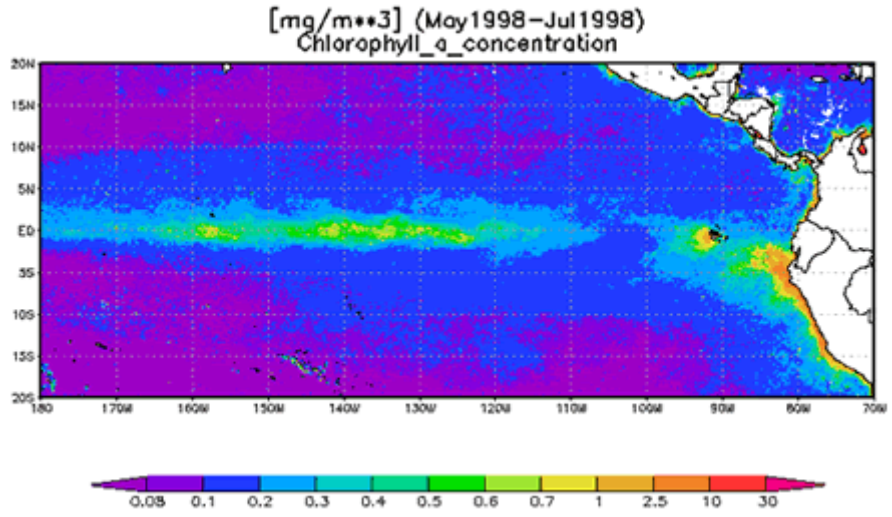
Basic Information:

Upwelling is an oceanographic phenomenon that involves wind-driven motion of dense, cooler, and usually nutrient-rich water towards the ocean surface, replacing the warmer, usually nutrient-depleted surface water. The nutrient-rich upwelled water stimulates the growth and reproduction of primary producers such as phytoplankton.



The increased availability of nutrients in upwelling regions results in high levels of primary production and thus fishery production.

There are at least five types of upwelling: coastal upwelling, large-scale wind-driven upwelling in the ocean interior, upwelling associated with eddies, topographically-associated upwelling, and broad-diffusive upwelling in the ocean interior including the upwelling at equatorial areas.



Upwelling in the equatorial areas

Statement Analysis:

Statement 1	Statement 2	Statement 3
Correct	**Incorrect**	**Correct**
When wind blows from land towards the ocean the	It occurs even at equator near inter tropical	World's best fishing zones are present in upwelling

surface water is replaced by deeper, cold water which is rich in nutrients.	convergence zones.	zones.

Q.9) Consider the following statements with respect to the tides.

1. Neap tides and spring tides occur in the gap of seven days.
2. The tidal bulges in the narrow continental shelves have greater height.

Which of the above statements is/are correct?

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

Q.9) Solution (a)

Basic Information:

- The periodical rise and fall of the sea level, once or twice a day, mainly due to the attraction of the sun and the moon, is called a tide
- Based on the position of Sun, Moon and Earth tides are classified into spring and neap tide

Spring Tides	Neap Tides
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.	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. The Moon's attraction, though more than twice as strong as the sun's, is diminished by the counteracting force of the sun's gravitational pull.

Statement Analysis:

Statement 1	Statement 2
Correct	**Incorrect**
Normally there is a seven day gap between the spring tide and the neap tide.	The tidal bulges have greater height in wide continental shelves. (Not narrow continental shelves).

Q.10) With respect to the Kelp Forests consider the following statements.

1. Kelp forests are recognised as most dynamic and productive ecosystems on the Earth.
2. They occur only in the temperate and polar coastal areas.

Which of the above statements is/are correct?

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

Q.10) Solution (a)

Basic Information:

Kelp Forests:

- Kelp forests are underwater areas with a high density of kelp, which covers about 25% of the world's coastlines.
- Kelp are large brown algae that live in cool, relatively shallow waters close to the shore. They grow in dense groupings much like a forest on land. These underwater towers of kelp provide food and shelter for thousands of fish, invertebrates, and marine mammal species.
- Kelp forests provide a unique habitat for marine organisms and are a source for understanding many ecological processes.
- Kelp forests occur worldwide throughout temperate and polar coastal oceans.

Statement Analysis:

Statement 1	Statement 2
Correct	**Incorrect**
Kelp forests are the most dynamic and productive ecosystems habitating diversity of marine organisms.	Kelp forests are usually found in temperate and polar coastal regions. But in 2007, they were also discovered in tropical waters near Ecuador.

Q.11) Arrange the following salts in the decreasing order of their concentration in seawater.

1. Magnesium
2. Sodium
3. Potassium
4. Calcium.

Choose the correct option:

a) 2-3-4-1

b) 2-1-4-3
c) 1-2-4-3
d) 1-2-3-4

Q.11) Solution (b)

Basic Information:

Concentration of salts in seawater:

Compound/Salt	Parts Per Million (PPM) in sea water
Chloride	18980
Sodium	10561
Magnesium	1272
Sulfur	884
Calcium	400
Potassium	380
Bromine	65

Q.12) The Grand Banks of New-Foundland are the biggest fishing grounds in the world. The reason behind this is

a) Grand Banks have a large influx of river water which adds nutrients to the coastal water.
b) The cold Labrador current and warm Gulf Stream mixes near the vicinity producing favourable conditions for growth of plankton.
c) Grand banks have deeper continental shelves.
d) Grand banks have lower salinity.

Q.12) Solution (b)

Explanation:

- The Grand Banks of Newfoundland are a group of underwater plateaus south-east of Newfoundland on the North American continental shelf.
- These areas are relatively shallow, ranging from 15 to 91 metres in depth.
- The cold Labrador Current mixes with the warm waters of the Gulf Stream here, often causing extreme foggy conditions. The mixing of these waters and the shape of the ocean bottom lifts nutrients to the surface. These conditions helped to create one of the richest fishing grounds in the world.

Q.13) Which of the following are correctly matched?

	Glacier In India	State/Union Territory
1.	Zemu Glacier	Arunachal Pradesh
2.	Siachen Glacier	Ladakh
3.	Gangotri Glacier	Himachal Pradesh
4.	Nun Kun Massif	Ladakh

Choose the correct option:

a) 2 and 4 only
b) 2 and 3 only
c) 1 and 2 only
d) 1, 2 and 4 only

Q.13) Solution (a)

Basic Information:

List of glaciers in India:

State/Union Territory	Glacier
Ladakh/Jammu Kashmir	Siachen, Hari Parbhat, Nun Kun Massif, Nubra
Uttarakhand	Gangotri, Satopanth
Himachal Pradesh	Bara Shigri, Beas Kund, Chhota Shigri
Sikkim	Zemu, Rathong, Lonak
Arunachal Pradesh	Bichom, Kangto

Q.14) Which of the following are favourable conditions for the growth of coral reefs?

1. Temperature in the range of 18-25 degree centigrade.
2. High saltish waters.
3. Low sediment waters.
4. Shallow waters.

Choose the correct option:

a) 1 and 2 only
b) 1 and 3 only
c) 1 and 4 only
d) All of the above.

Q.14) Solution (d)

Basic Information:

Coral Reefs:

- A coral reef is an underwater ecosystem characterised by reef-building corals.
- Reefs are formed of colonies of coral polyps held together by calcium carbonate.

Favourable conditions for growth of Coral Reefs:

The reef building corals survive best under the following conditions:

- The temperature should be moderate between 18-25 degree centigrade. They will not flourish where there are cold currents because of the upwelling of the cold water. Hence coral reefs are generally absent on the western coasts of the continents.
- The depth of the water should not exceed 180 feet (Shallow waters) because beyond this depth sunlight is too faint for photosynthesis to take place. This is essential for the survival of the microscopic algae on which coral polyps depend.
- The water should be saltish.
- The waters should be free from sediments.Corals therefore survive best in the moving ocean water well away from the silty coasts or muddy mouths of streams.
- The corals are best developed on the seaward side of the reef where constantly moving waves, tides and currents maintain an abundant supply of clear and oxygenated water.

Q.15) According to the United Nations Convention on Law of the Sea (UNCLOS) what does the term "Territorial Waters" refer to?

a) Area covering all water and waterways on the landward side of the baseline.
b) Area upto 12 nautical miles from the baseline.
c) Area upto 24 nautical miles from the baseline.
d) Area upto 200 nautical miles from the baseline.

Q.15) Solution (b)

Basic Information:

UNCLOS:

- The United Nations Convention on the Law of the Sea (UNCLOS) also called the Law of the Sea Convention or the Law of the Sea treaty is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III) which took place between 1973 and 1982.
- The Law of the Sea Convention defines the rights and responsibilities of nations with respect to their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources.
- The convention set the limit of various areas, measured from a carefully defined baseline.

The areas are as follows:

1. **Internal waters:**

- Covers all water and waterways on the landward side of the baseline.
- The coastal state is free to set laws, regulate use, and use any resource.
- Foreign vessels have no right of passage within internal waters.

2. **Territorial waters**:

- Area upto to 12 nautical miles from the baseline.
- The coastal state is free to set laws, regulate use, and use any resource.
- Vessels are given the right of innocent passage through any territorial waters.

3. **Contiguous zone:**

- Beyond the 12-nautical-mile (22 km) limit, there is a further 12 nautical miles (22 km) from the territorial sea baseline limit, the contiguous zone, in which a state can

continue to enforce laws in four specific areas: customs, taxation, immigration and pollution.

4. **Exclusive economic zones (EEZs):**

- These extend 200 nautical miles from the baseline.
- Within this area, the coastal nation has sole exploitation rights over all natural resources.

Q.16) Which of the following are freshwater lakes in India?

1. Vembanad Lake
2. Kolleru Lake
3. Tso Moriri
4. Pulicat lake

Choose the correct option:

a) 1 and 2 only
b) 2 and 3 only
c) 1 and 3 only
d) 2 and 4 only

Q.16) Solution (b)

Basic Information:

Saline Water Lakes in India	Freshwater Lakes in India
Sambhar lake, Chilika lake, Pulikat lake, Pongong Tso lake, Vembanad lake, Degana lake, Didwana lake, Kuchaman in Rajasthan etc	Kolleru lake, Loktak lake, Sardar Sarovar lake, Indira Sagar lake, Chandratal, suraj tal, Deepor Beel. Sheshnag, Tso Moriri etc.

Q.17) With respect to the estuaries consider the following statements.

1. Estuaries filter water providing favourable habitats for marine organisms.
2. Estuaries provide ideal conditions for ports.

Which of the above statements is/are correct?

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

Q.17) Solution (c)

Basic Information:

Estuaries:

- An estuary is a partially enclosed coastal body of brackish water with one or more rivers or streams flowing into it and with a free connection to the open sea.
- Estuaries form a transition zone between river environments and maritime environments known as ecotone.
- Estuaries are subject both to marine influences such as tides, waves, and the influx of saline water and to riverine influences such as flows of freshwater and sediment.
- The mixing of seawater and freshwater provides high levels of nutrients both in the water column and in sediment making estuaries among the most productive natural habitats in the world.

Statement Analysis:

Statement 1	Statement 2
Correct	**Correct**
Estuaries filter out sediments and pollutants from rivers and streams before they flow into the oceans. Hence they provide a healthy environment for marine organisms to thrive.	Estuaries are an important part of the shipping industry because there are many industrial ports located in estuaries due its depth of water and connection with open sea.

Q.18) The movement of ocean currents is influenced by several factors. Which of the following are the primary forces that initiate the movement of ocean currents?

1. Heating by solar energy
2. Wind
3. Gravity
4. Coriolis force

Choose the correct option

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

Q.18) Solution (d)

Basic Information:

- Ocean currents are like river flow in oceans. They represent a regular volume of water in a definite path and direction.
- Ocean currents are influenced by two types of forces namely :

(i) Primary forces that initiate the movement of water;
(ii) Secondary forces that influence the currents to flow.

The primary forces that influence the currents are:

(i) heating by solar energy
(ii) wind
(iii) gravity
(iv) 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 Coriolis force intervenes and causes the water to move to the right in the northern hemisphere and to the left in the southern hemisphere.

Q.19) Consider the following statements with respect to sea surface temperature.

1. The oceans in the northern hemisphere have higher temperature than the ocean in the southern hemispheres.
2. The sea surface temperature is maximum at the equator.

Which of the above statements is/are correct?

a) 1 only
b) 2 only

c) 1 and 2
d) Neither 1 nor 2

Q.19) Solution (a)

Basic Information:

The sea surface temperature is influenced by several factors. Prominent among them include.

1. Latitude: The temperature of surface water decreases from the equator towards the poles because the amount of insolation decreases poleward.
2. Unequal distribution of land and water: The oceans in the northern hemisphere receive more heat due to their contact with larger extent of land than the oceans in the southern hemisphere.
3. Prevailing wind: 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 in longitudinal variation in the temperature. Contrary to this, the onshore winds pile up warm water near the coast and this raises the temperature.
4. Ocean currents: Warm ocean currents raise the temperature in cold areas while the cold currents decrease the temperature in warm ocean areas.

Statement Analysis:

Statement 1	Statement 2
Correct	**Incorrect**
The oceans in the Northern hemisphere have high temperature due to high density of landmass. Influence of land mass is relatively less in the southern hemisphere and hence they have lesser sea surface temperature.	The highest sea surface temperature is recorded at the sub-tropical high pressure belts due to subsidence of air. This produces anticyclonic conditions and clear sky. At the equator the high amount of precipitation and cloudy sky reduces the sea surface temperature.

Q.20) What does the term 'Halocline' refer to?

a) Line joining points of equal salinity in oceans.
b) Line joining points of equal temperature in oceans.
c) Zone representing the sharp increase in the salinity of the ocean water.
d) Zone representing the sharp decrease in the temperature of the ocean water.

Q.20) Solution (c)

Explanation:

- Halocline represents the vertical zone in the oceanic water column in which salinity changes rapidly with depth. It is located below the well-mixed uniformly saline surface water layer.
- Salinity generally increases with depth in the ocean waters.
- The lower salinity water rests above the higher salinity dense water.

Q.21) Consider the following statements about 'Scheme for Protection and Preservation of Endangered Languages of India':

1. The objective of the scheme is to document and archive the country's languages that have become endangered or likely to be endangered in the near future.
2. The Scheme was instituted by Ministry of Culture.

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.21) Solution (a)

Statement 1	**Statement 2**
Correct	**Incorrect**
The **sole objective** of the 'Scheme for Protection and Preservation of Endangered Languages of India' is **to document and archive the country's languages that have become endangered or likely to be endangered in the near future.**	Scheme was instituted by **Ministry of Human Resource Development**. The scheme is monitored by Central Institute of Indian Languages (CIIL) located in Mysuru, Karnataka.

Q.22) The Global Climate Risk Index is released by

a) United Nations University Institute for Environment and Human Security (UNU-EHS)
b) Germanwatch
c) Climate Action Network (CAN)
d) World Economic Forum (WEF)

Q.22) Solution (b)

- The **Global Climate Risk Index** was released by international environmental think tank **Germanwatch**.
- It assessed 181 countries and quantified impacts of climate change through economic losses, losses to GDP and fatalities to arrive at a ranking.
- India's rank has worsened from 14th spot in 2017 to 5th most vulnerable country to climate change in 2018. Japan topped the list followed by the Philippines and Germany.

Q.23) With reference to interstellar object 'BORISOV' consider the following statements:

1. It is the first interstellar object to be identified till date to have passed through our solar system.
2. It follows an elliptical path.

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.23) Solution (d)

Statement 1	**Statement 2**
Incorrect	**Incorrect**
COMET 2I/BORISOV has become the second interstellar object to be identified till date to have passed through our solar system. The first one was 1I/'Oumuamua'. The name Borisov honours its discoverer, astronomer	Objects born in our solar system are trapped in elliptical orbits around the sun while **interstellar bodies follow the hyperbolic path**. It was confirmed that 2I/Borisov has a more hyperbolic path than

Gennady Borisov from Crimea.	any other comet which has been studied to date.

Q.24) Which of the following country imposes Digital Services Tax (DST) known as 'GAFA' Tax?

a) Germany
b) Switzerland
c) France
d) Norway

Q.24) Solution (c)

- France's **Digital Services Tax (DST)** is a 3% tax on the turnover of digital companies with global turnover of at least €750 million, of which €25 million is generated in France.
- France's DST is known informally as the **"GAFA" tax** after the initials for Google, Apple, Facebook and Amazon.

Q.25) With reference to Industrial Security Annex (ISA), which of the following statements is/are *NOT CORRECT*?

1. It is a part of the Communications Compatibility and Security Agreement (COMCASA) signed between India and USA.
2. It will facilitate the exchange of classified military information between Indian and the U.S. defense industries.

Select the correct answer using the code given below:

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

Q.25) Solution (a)

Statement 1	**Statement 2**
Incorrect	**Correct**
Industrial Security Annex (ISA) will provide a	**Industrial Security Annex (ISA) is**

framework for exchange and protection of classified military information between the U.S. and Indian defence industries (private sector). ISA will open the door for U.S. defence companies to partner with the Indian private sector.	**a part of the General Security of Military Information Agreement (GSOMIA)** signed between India and USA.

Q.26) Which of the following water bodies is located in between Crimean Peninsula and Russia?

a) Sea of Azov
b) Dnieper River
c) Sea of Marmara
d) Gulf of Bothnia

Q.26) Solution (a)

Q.27) India's 'Four balance sheet challenge' includes

1. Infrastructure companies
2. Banks
3. NBFCs
4. Real Estate Companies
5. Telecom Companies

Select the correct code:

a) 1, 2, 3 and 4
b) 2, 3, 4 and 5
c) 1, 3, 4 and 5
d) 1, 2, 4 and 5

Q.27) Solution (a)

Citing reasons for the "severe illness in the economy", former Chief Economic Advisor Arvind Subramanian has pointed out that India is now facing a "Four Balance Sheet" challenge -- comprising banks, infrastructure, plus NBFCs and real estate companies -- and is trapped in an adverse interest growth dynamic.

Q.28) 'Somalia' does not border

a) Kenya
b) Djibouti
c) Eritrea
d) Ethiopia

Q.28) Solution (c)

Q.29) Which of the following statements with respect to 'QR Code' is/are correct?

1. Characters and special characters can be stored in a QR Code.
2. QR Code can store up to 7089 digits.

Select the correct statements

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

Q.29) Solution (c)

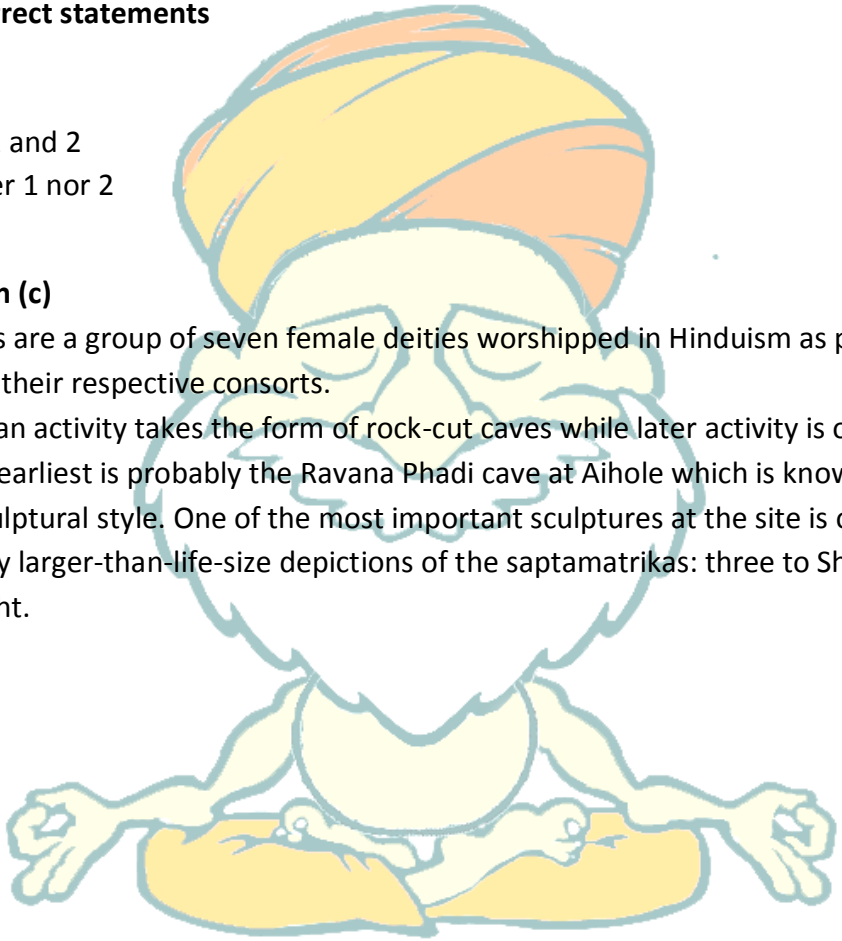
Up to 7089 digits or 4296 characters, including punctuation marks and special characters, can be entered in one Code. In addition to numbers and characters, words and phrases (e.g. Internet addresses) can be encoded as well. As more data is added to the QR Code, the Code size increases and the Code structure becomes more complex.

Q.30) Consider the following statements with respect to 'Saptamatrikas'

1. They are a group of seven female deities worshipped in Hinduism as personifying the energy of their respective consorts.
2. Nataraja sculpture at Ravana Phadi cave, Aihole is surrounded by larger-than-life-size depictions of the saptamatrikas.

Select the correct statements

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



Q.30) Solution (c)

Saptamatrikas are a group of seven female deities worshipped in Hinduism as personifying the energy of their respective consorts.

Early Chalukyan activity takes the form of rock-cut caves while later activity is of structural temples. The earliest is probably the Ravana Phadi cave at Aihole which is known for its distinctive sculptural style. One of the most important sculptures at the site is of Nataraja, surrounded by larger-than-life-size depictions of the saptamatrikas: three to Shiva's left and four to his right.