Q.1) Deep sea – Hydrothermal vents were recently discovered by the scientist. Consider following statements about Hydrothermal ecosystems?

1. Only micro organisms can survive in this environment.
2. The organisms are not dependent on sunlight for food production.
3. Bacteria create energy using hydrogen sulphide through the process of chemosynthesis

Which of the above statement is/are correct?

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

Q.1) Solution (c)

Deep-sea hydrothermal vents form as a result of volcanic activity on the ocean floor. Water seeps through cracks in the Earth's crust, dissolving metals and minerals as it becomes super-heated from nearby magma.

Many creatures like shrimp, crabs, giant tubeworms, clams, slugs, anemones, and fish thrive in these conditions. These animals depend on chemosynthesis rather than photosynthesis.

Q.2) The physical characteristics that effect ecological diversity are?

1. Interaction of one species with other in ecosystem
2. Temperature
3. Precipitation
4. Topography
5. Taxonomic diversity

Which of the above statement is/are correct?

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

Q.2) Solution (c)

The physical characteristics of an environment that affect ecosystem diversity are the temperature, precipitation, and topography of the ecosystem. Therefore, there is a general trend for warm tropical ecosystems to be richer in species than cold temperate ecosystems.

Diversity also depends on taxonomic diversity and interaction between species. However, these are **Biotic characteristics.**

Q.3) With respect to changes in ecosystem, Disturbances in ecosystem may lead to

1. Loss of biodiversity.
2. Increase in species richness of ecosystem.

Which of the above statement is/are correct?

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

Q.3) Solution (c)

Environmental disturbance on a variety of temporal and spatial scales can affect the species richness and, consequently, the diversity of an ecosystem. This disturbance can damage the present ecosystem thus leading to loss of biodiversity. Nevertheless, moderate levels of occasional disturbance can also increase the species richness of an ecosystem by creating spatial heterogeneity in the ecosystem, and also by preventing certain species from dominating the ecosystem (Invasive species).

Q.4) Consider the following statements:

1. Physical characteristics of an area will significantly influence the diversity of the species within a community
2. Organisms can also modify the physical characteristics of the ecosystem.

Which of the above statement is/are correct?

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

Q.4) Solution (c)

While the physical characteristics of an area will significantly influence the diversity of the species within a community, the organisms can also modify the physical characteristics of the ecosystem.

For example: Stony corals (Scleractinia) are responsible for building the extensive calcareous structures that are the basis for coral reef ecosystems.

Trees can modify the microclimate and the structure and chemical composition of the soil around them.

Q.5) The limiting factors of terrestrial ecosystem are?

1. Moisture

2. Temperature
3. Soil
4. Altitude

Choose correct option from below:

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

Q.5) Solution (d)

There are several fundamental factors that limit ecosystem growth, including temperature, precipitation, sunlight, soil configuration, and soil nutrients. Two important limiting factors are temperature and precipitation.

Q.6) Ecosystems are important to sustain life on earth, they provide?

1. Food, fibre and fuel
2. Pollination
3. Flood control
4. Security against draught

Choose correct option from below:

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

Q.6) Solution (d)

Ecosystems provide goods including food, fiber, and fuel, as well as services such as pollination, flood control and security against draughts. These above services are all necessary for human and wildlife survival.

Q.7) Consider the following pairs:

	Type of ecosystem		**Type of pyramid**
1.	Forest ecosystem	:	Inverted for numbers
2.	Aquatic ecosystem	:	Inverted for Biomass
3.	Grassland ecosystem	:	Inverted for energy

Which of the above statement is/are incorrect?

a) 1 only

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

Q.7) Solution (c)

Forest ecosystem	Aquatic ecosystem	Grassland ecosystem
Pyramid of numbers represent the number of organisms at each trophic level. The pyramids of number in a forest ecosystem are inverted. In this, the first trophic level consists of Tress. The number of Trees is least in number.	Marine biomass pyramids show the relative level of biomass at each of the trophic levels for ocean ecosystems. Marine biomass pyramids tend to be inverted due to the dynamics of the producers and consumers. Many marine ecosystems rely on phytoplankton as their primary producer. Phytoplankton are very small, even microscopic. These tiny organisms reproduce and die very quickly. So, at any given moment their biomass is relatively small, even though they supply energy for the entire ecosystem.	An energy pyramid represents the amount of energy at each trophic level and loss of energy at each transfer to another trophic level. Hence the pyramid is always upward, with a large energy base at the bottom.

Q.8) With reference to threat of Desertification across globe. Consider the following statements:

1. Desertification is permanent degradation of land that was once arable
2. The UNCCD has also promoted the Great Green Wall Initiative, to combat desertification.
3. More than 50 percent of Earth's land area is already degraded.

Which of the above statement is/are correct?

a) 1 only
b) 1 and 2 only

c) 1 and 3 only
d) All of the above

Q.8) Solution (d)

Desertification is the permanent degradation of land that was once arable. More than 75 percent of Earth's land area is already degraded, according to the European Commission's World Atlas of Desertification, and more than 90 percent could become degraded by 2050.
The UNCCD has promoted the Great Green Wall Initiative, an effort to restore 386,000 square miles (100 million hectares) across 20 countries in Africa by 2030.

Q.9) Consider the following pairs:

	Aquatic organisms		**Characteristics**
1.	Neuston	:	These are unattached organisms, living at air-water interface
2.	Periphyton	:	This group contains animals , which are swimmers
3.	Nekton	:	Organisms which remain attached to stems and leaves
4.	Benthos	:	Found living at the bottom of water masses

Which of the above is/are incorrectly matched?

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

Q.9) Solution (c)

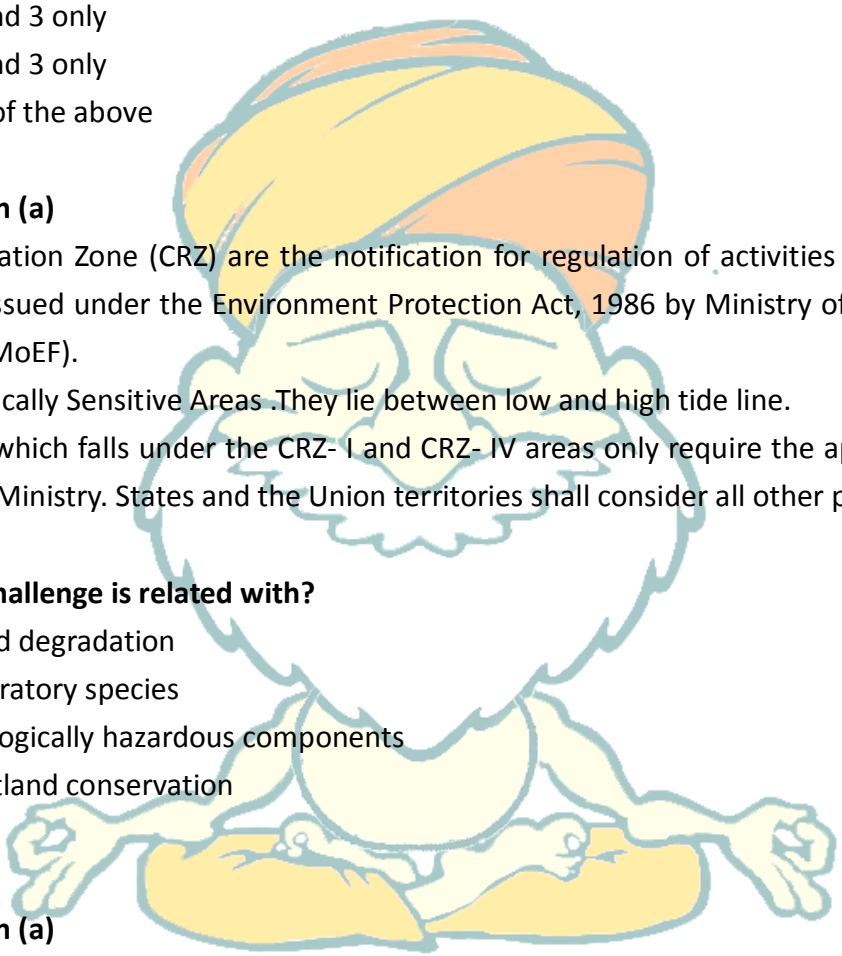
Nuestons	The term neuston refers to the assemblage of organisms associated with the surface film of lakes, oceans, and slow-moving portions of streams.
Periphyton	Periphyton is a complex mixture of algae, cyanobacteria, heterotrophic microbes, and detritus that is attached to submerged surfaces in most aquatic ecosystems.
Nektons	Nekton are aquatic animals that can move on their own by “swimming” through the water.
Benthos	Benthos are aquatic organisms that crawl in sediments at the bottom of a body of water.

Q.10) Recently government of India changed coastal regulation zone guidelines. Which of the below statements is/are correct?

1. It was issued under the Environment Protection Act, 1986 by Ministry of Environment and Forests.
2. CRZ-1 is ecologically sensitive area, this lies between high tide line and shore line
3. CRZ-1 and CRZ-IV are approved by states and others by central environmental ministry.

Choose correct option from below:

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



Q.10) Solution (a)

Coastal Regulation Zone (CRZ) are the notification for regulation of activities in the coastal area. It was issued under the Environment Protection Act, 1986 by Ministry of Environment and Forests (MoEF).

CRZ I - Ecologically Sensitive Areas .They lie between low and high tide line.

The projects which falls under the CRZ- I and CRZ- IV areas only require the approval of the Environment Ministry. States and the Union territories shall consider all other projects.

Q.11) Bonn challenge is related with?

a) Land degradation
b) Migratory species
c) Biologically hazardous components
d) Wetland conservation

Q.11) Solution (a)

The Bonn Challenge is a global effort to bring 150 million hectares of the world's deforested and degraded land into restoration by 2020, and 350 million hectares by 2030.

It was launched in 2011 by the Government of Germany and IUCN, and later endorsed and extended by the New York Declaration on Forests at the 2014 UN Climate Summit.

Q.12) Eutrophication is a process that involves:

a) Increase in concentration of nutrients at each trophic level
b) Eutrophication is an enrichment of water bodies by nutrient salts
c) Decrease in ecological footprint in ecosystem

d) Decrease in biological oxygen demand

Q.12) Solution (b)

Eutrophication is an enrichment of water by nutrient salts that causes structural changes to the ecosystem such as: increased production of algae and aquatic plants, depletion of fish species, general deterioration of water quality and other effects that reduce and preclude use".

Harmful algal blooms, dead zones, and fish kills are the results of a process called eutrophication.

Q.13) Factors limiting the productivity of aquatic Habitats are?

1. Sunlight
2. Dissolved oxygen
3. Transparency of water
4. Water temperature

Choose correct option from below:

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

.

Q.13) Solution (d)

Both biotic and Abiotic factors effect productivity of aquatic ecosystems. Abiotic factors are physical or chemical parts of the environment that affect the organisms that are in that environment. For aquatic ecosystems, these factors include light levels, water flow rate, temperature, dissolved oxygen, acidity (pH), salinity and depth

Q.14) Wetland ecosystems can be regarded as?

a) Terrestrial ecosystem
b) Ecotone
c) Aquatic ecosystem
d) Both b) and c)

Q.14) Solution (d)

According to Ramsar convention on wetlands.Areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt including areas of marine water, the depth of which at low tide does

not exceed 6 meters

As wetlands are transitional ecosystems between terrestrial and aquatic, they act as zone of ecotone.

Q.15) In the context of falling fish stocks in oceans. The unregulated and unscientific fishing is the major cause leading to this situation. Which of the below are harmful practices?

1. Cynide fishing
2. Bottom trawling
3. By catch
4. Dynamite fishing
5. Muro-ami

Choose correct option from below:

a) 1 and 2 only
b) 2 only
c) 3, 4 and 5only
d) All of the above.

Q.15) Solution (d)

Bottom trawling	Bottom Trawling is one of the most damaging methods of fishing. It is an industrial technique that uses huge nets weighed down with weighty ballast that get dragged down the sea bed, collecting and squashing everything that is on the way, from fish to aquatic plants.
Muro- ami	This illegal fishing method is mostly used in the Southeast Asia. It involves using a huge encircling net with a number of pounding tools, normally weighty stones or cement blocks attached on the surface to pound fish out of coral reefs. Fishermen pound the coral reefs with the cement blocks scaring the fish out.
Ghost Fishing	Ghost fishing refers to the deliberate or unintentional leaving of fishing objects in a water body. The fishing nets still continue to catch fish and other creatures big and

	small, the fish eventually die from overtiredness or suffocation after a long struggle to get to the top to breathe.

Q.16) ISFR-2019 has reported increase in forest cover. In this context arrange type of forest given below in descending order of their geographical extent

1. Tropical evergreen forests
2. Tropical moist deciduous forests
3. Tropical dry deciduous forests
4. Subtropical dry evergreen forests

Choose correct option from below:

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

Q.16) Solution (c)

Forest Types of India the relative extents of different types of forests in India are presented in the following table:

Forest type	*Area (in million hectare)*	*Percent of total forest area*
Tropical moist evergreen	4.5	5.8
Tropical moist semievergreen	1.9	2.5
Tropical moist deciduous	23.3	30.3
Littoral and Swamp	0.7	0.9
Tropical dry evergreen	0.1	0.1
Tropical dry deciduous	29.4	38.2
Tropical Thorn	05.2	6.7
Subtropical broad leaved montane wet forest	0.3	0.4
Subtropical dry evergreen	0.2	0.2
Subtropical pine	3.7	5.0
Montane wet temperate	1.6	2.6
Himalayan moist temperate	2.6	3.4
Himalayan dry temperate	0.2	0.2
Subalpine	3.3	4.3
Moist alpine	—	—
Dry alpine	—	—

Q.17) Mangroves play important role in coastal ecology. Consider the following

statements:

1. Mangroves can be found in all tropical, sub-tropical and temperate regions of the world
2. Mangroves extent increased according to ISFR-2019
3. They act as physical barriers against storm surges in coastal areas.

Which of the above statement is/are correct?

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

Q.17) Solution (c)

Statement-1: incorrect	**Statement-2: correct**	**Statement-3: correct**
A mangrove is a shrub or small tree that grows in coastal saline or brackish water. The term is also used for tropical coastal vegetation consisting of such species. Mangroves occur worldwide in the tropics and subtropics, mainly between latitudes 25° N and 25° S.	Mangrove cover has been separately reported in the ISFR 2019 and the total mangrove cover in the country is 4,975 sq km. An increase of 54 sq Km in mangrove cover has been observed as compared to the previous assessment of 2017. Top three states showing mangrove cover increase are Gujarat (37 sq km) followed by Maharashtra (16 sq km) and Odisha (8 sq km).	Mangroves protect shorelines from damaging storm and hurricane winds, waves, and floods. Mangroves also help prevent erosion by stabilizing sediments with their tangled root systems.

Q.18) Which of the following statement(s) is/are correct regarding 'Biodiversity Hotspot'?

1. A region to qualify as Biodiversity hotspot must have at least 1,500 vascular plants as endemics and 30% or less of its original natural vegetation.
2. Conservation International was a pioneer in defining and promoting the concept of hotspots. In 1989.

Which of the above statement is/are correct?

a) 1 only
b) 2 only

c) Both 1 and 2
d) Neither 1 nor 2

Q.18) Solution (c)

Statement-1: correct	**Statement-2: correct**
To qualify as a biodiversity hotspot, a region must meet two strict criteria: It must have at least 1,500 vascular plants as endemics — which is to say, it must have a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is irreplaceable. It must have 30% or less of its original natural vegetation. In other words, it must be threatened.	Conservation International was a pioneer in defining and promoting the concept of hotspots. In 1989, just one year after scientist Norman Myers wrote the paper that introduced the hotspots concept

Q.19) Corals reefs ecosystem are known for their rich biodiversity. Consider the following statements with respect to coral ecosystem

1. Coral ecosystem is found only in tropical and sub-tropical regions
2. The coral polyps live symbiotically with algae that provides them with their food
3. Disease, temperature extremes and pollution can cause coral bleaching

Which of the above statement is/are correct?

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

Q.19) Solution (b)

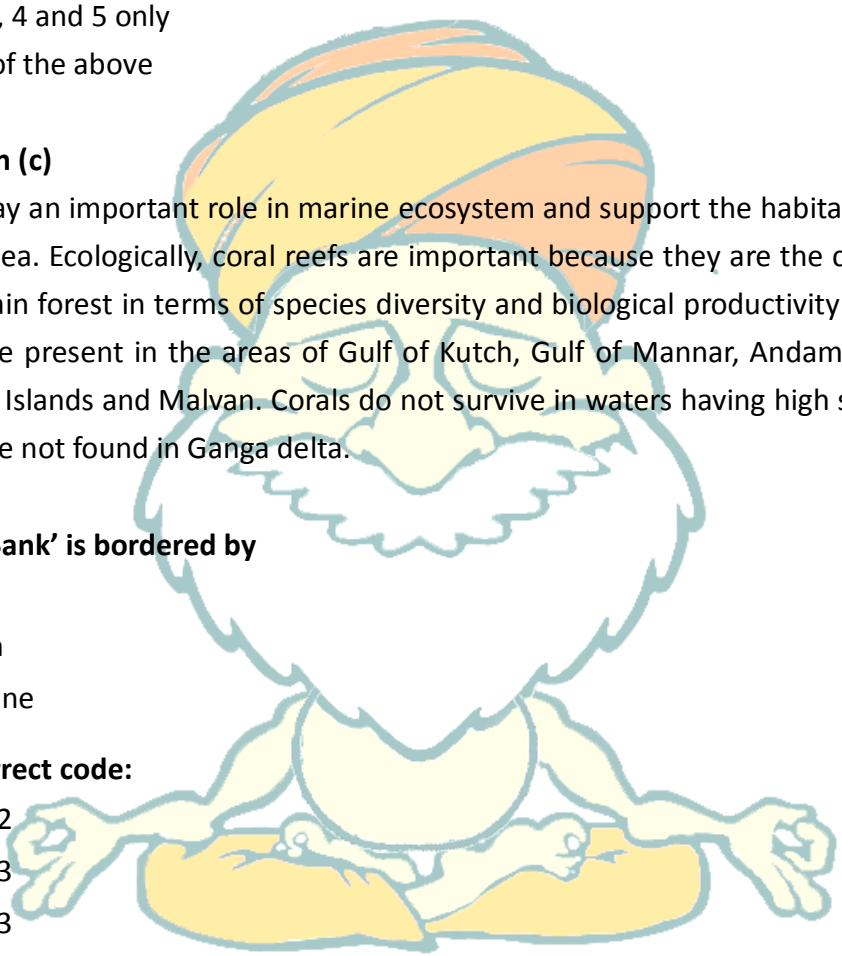
Corals are tiny animals that live in large communities made up of individual polyps that secrete a calcium carbonate substance that hardens and builds up to form the reef structure over time. The coral polyps live symbiotically with algae that provides them with their food. Disease, temperature extremes and pollution can cause corals to expel the algae, leaving only the white calcium carbonate skeleton behind, an event called coral bleaching. Coral bleaching is a worry with global warming heating up the oceans and carbon dioxide causing the oceans to acidify. Although corals exist both in temperate and tropical waters, shallow-water reefs form only in a zone extending from approximately 30° N to 30° S of the equator.

Q.20) The regions where corals are found in India are?

1. Gulf of kutch
2. Gulf of mannar
3. Ganges delta
4. Lakshadweep Islands
5. Andaman and Nicobar Islands

Choose correct option from below:

a) 1 and 2 only
b) 1, 2 and 3 only
c) 1, 3, 4 and 5 only
d) All of the above



Q.20) Solution (c)

Coral reefs play an important role in marine ecosystem and support the habitats of flora and fauna in the sea. Ecologically, coral reefs are important because they are the counterpart to the tropical rain forest in terms of species diversity and biological productivity in the Ocean. Coral reefs are present in the areas of Gulf of Kutch, Gulf of Mannar, Andaman & Nicobar, Lakshadweep Islands and Malvan. Corals do not survive in waters having high sediment load hence they are not found in Ganga delta.

Q.21) 'West Bank' is bordered by

1. Israel
2. Jordan
3. Palestine

Select the correct code:

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

Q.21) Solution (a)

West Bank is a landlocked territory near the Mediterranean coast of Western Asia, bordered by Jordan to the east and by the Green Line separating it and Israel on the south, west and north.

Q.22) Which of the following statements is/are correct with respect to 'Yemen'?

1. It is bordered by two countries only.
2. It opens to the Persian Gulf and Strait of Hormuz.

Select the correct statements

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

Q.22) Solution (a)

Yemen is bordered by Saudi Arabia to the north, the Red Sea to the west, the Gulf of Aden and Guardafui Channel to the south, and Oman and the Arabian Sea to the east.

Q.23) 'Kvanefjeld project' is located in

a) Russia
b) Greenland
c) Great Britain
d) Canada

Q.23) Solution (b)

Greenland currently only has one major mining project, the Kvanefjeld rare earth project launched in 2007. The Kvanefjeld project is thought to be one of the world's biggest undeveloped resources of rare earth elements.

Q.24) Which of the following pairs is/are correctly matched?

Harvest Festival State

1. Nuakhai – Odisha
2. Hareli – Maharashtra
3. Tokhu Emong – Manipur

Select the correct code:

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

Q.24) Solution (a)

Nuakhai – Odisha

Hareli – Chhattisgarh

Tokhu Emong – Nagaland

Q.25) Consider the following statements with respect to 'Amazon Fund'.

1. It aims to raise donations for non-reimbursable investments in efforts to prevent, monitor and combat deforestation, as well as to promote the preservation and sustainable use of forests in the Amazon Biome.
2. The fund is a REDD+ mechanism managed by the UN Environment.

Select the correct statements

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

Q.25) Solution (a)

The Amazon Fund aims to raise donations for non-reimbursable investments in efforts to prevent, monitor and combat deforestation, as well as to promote the preservation and sustainable use of forests in the Amazon Biome.

The Amazon Fund is a REDD+ mechanism managed by the Brazilian Development Bank (BNDES).

Q.26) Consider the following statements with respect to 'Comprehensive Nuclear-Test–Ban Treaty (CTBT)'

1. It bans nuclear explosions for military purposes, in all environments but permits for civilian purpose.
2. India is a signatory to the Comprehensive Nuclear-Test–Ban Treaty (CTBT).

Select the correct statements

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

Q.26) Solution (d)

The Comprehensive Nuclear-Test–Ban Treaty (CTBT) is a multilateral treaty that bans all nuclear explosions, for both civilian and military purposes, in all environments. It was adopted by the United Nations General Assembly on 10 September 1996 but has not entered into force, as eight specific nations have not ratified the treaty.
India is a non-signatory.

Q.27) Which of the following pairs are correctly matched?

1. Shani Shingnapur – Maharashtra
2. Kapil Muni Temple – Odisha
3. Arulmigu Dhandayuthapani Swamy Temple – Tamil Nadu

Select the correct code:

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

Q.27) Solution (c)

Shani Shingnapur – Maharashtra
Kapil Muni Temple – West Bengal
Arulmigu Dhandayuthapani Swamy Temple – Tamil Nadu

Q.28) Consider the following statements with respect to 'The Special Protection Group (SPG)'.

1. It was formed aftermath the 2001 Indian Parliament attack.
2. It provides security only to the Prime Minister of India and their immediate family members.

Select the correct statements

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

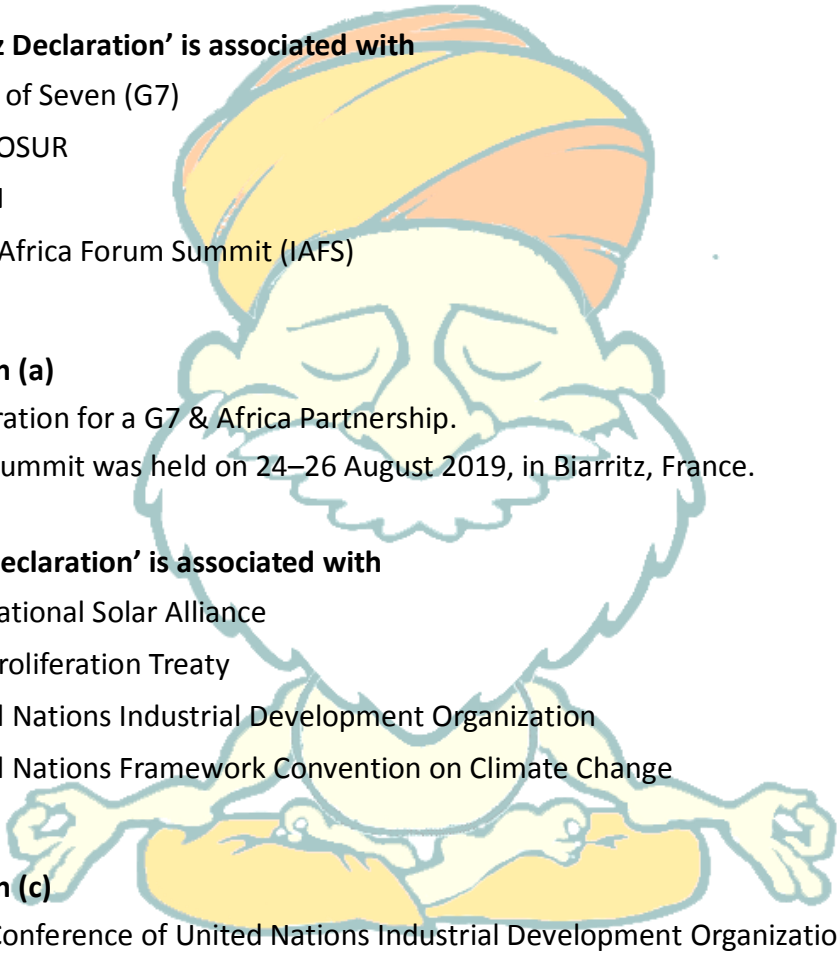
Q.28) Solution (b)

The Indian Special Protection Group (SPG) is a special force for providing proximate security to the Prime Minister of India and members of their immediate families wherever in the

world they are. It was formed in 1988 by an act of the Parliament of India.

Special Protection Group (Amendment) Bill, 2019 Changes

- The amendments makes two key changes: SPG will provide security only to Prime Minister of the day and immediate family members residing with him or her.
- The other key change is that former Prime Ministers will be guarded by SPG commandos only for a period of 5 years after demitting office.
- Earlier, it used to provide security to former prime ministers as well but now Z+ security cover has been given to them.



Q.29) 'Biarritz Declaration' is associated with

a) Group of Seven (G7)
b) MERCOSUR
c) ASEAN
d) India–Africa Forum Summit (IAFS)

Q.29) Solution (a)

Biarritz Declaration for a G7 & Africa Partnership.
The 45th G7 summit was held on 24–26 August 2019, in Biarritz, France.

Q.30) 'Lima Declaration' is associated with

a) International Solar Alliance
b) Non-Proliferation Treaty
c) United Nations Industrial Development Organization
d) United Nations Framework Convention on Climate Change

Q.30) Solution (c)

The General Conference of United Nations Industrial Development Organization (UNIDO) adopted a new Lima Declaration that charted the Organization's development priorities for the coming years, placing special emphasis on inclusive and sustainable industrial development.