Q.1) Consider the following statements with respect to organic farming:

1. Participatory Guarantee System (PGS) is the system of certification of organic products in India.
2. Organic farming denotes no use of fertilizers at all.
3. India has largest number of organic farmers in the world which accounts for 30 percent of all farmers in the world.

Which of the statements given above is/are correct?

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

Q.1) Solution (b)

Statements explanation

Statement 1	Statement 2	Statement 3
Correct	**Incorrect**	**Correct**
PGS-India (Participatory Guarantee System of India) is a quality assurance initiative that is locally relevant, emphasize the participation of stakeholders, including producers and consumers and operate outside the frame of third party certification.	Organic farming means avoiding all unnatural chemicals. In this process of farming, all the fertilizer and pesticide are obtained from natural sources such as bone meal or blood meal. **So, organic farming does not avoid the chemocal fertilizers at all but it uses natural fertilisers** **So statement is not correct.**	India is home to 30 per cent of the total organic producers in the world, but accounts for just 2.59 per cent (1.5 million hectares) of the total organic cultivation area of 57.8 million hectares, according to the World of Organic Agriculture 2018 report.

	According to FSSAI, 'organic farming' is a system of farm design and management to create an ecosystem of agriculture production without the use of synthetic external inputs such as chemical fertilisers, pesticides and synthetic hormones or genetically modified organisms	

Q.2) What are the mechanisms of adaptations of Halophytic (plants which grow on soils with high concentration of salts?)

1. Vivipary mode of seed germination is found in halophytes.
2. In halophytic plants, leaves are usually thin or without leaves.
3. Roots called pneumatophores with pneumathodes to get sufficient aeration are present.

Which of the statements given above is/are correct?

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

Q.2) Solution (d)

Explanation:

Basic Information

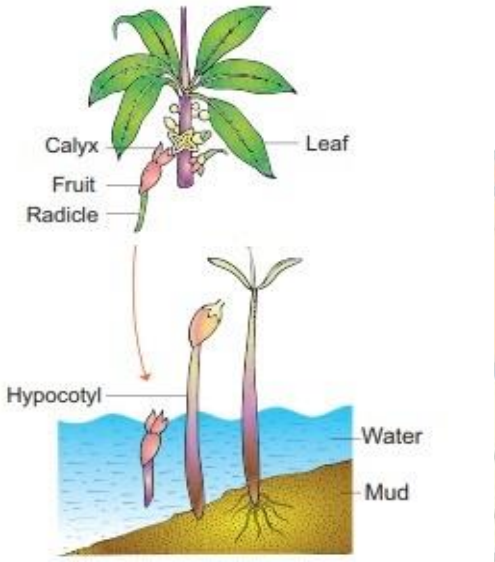
What are halophytes?

There are special type of Halophytic plants which grow on soils with high concentration of salts. Examples: Rhizophora, Sonneratia and Avicennia.

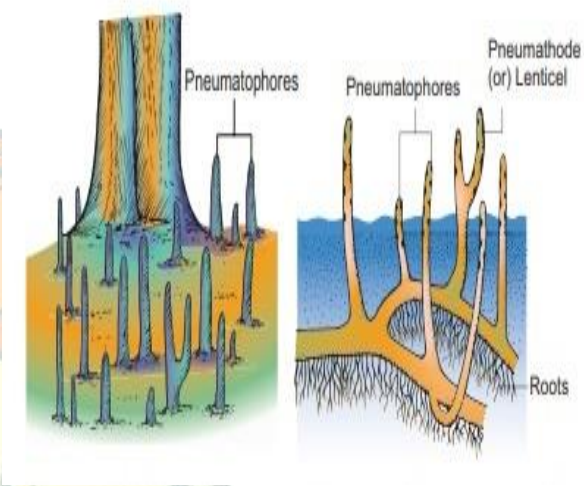
Halophytes are usually found near the sea-shores and Estuaries. The soils are physically wet but physiologically dry. As plants cannot use salt water directly they require filtration of salt using

physiological processes. This vegetation is also known as mangrove forest and the plants are called mangroves.

Adaptation methods



Vivipary mode of germination



Pneumatophores of halophytes

Statement 1	Statement 2	Statement 3
Correct	**Incorrect**	**Correct**
Seeds germinate in the fruits of mother plant itself (Vivipary). Vivipary mode of seed germination is found in halophytes.	Leaves are usually thick, entire, succulent and glossy. Some species are aphyllous (without leaves). So statement 2 is Incorrect. The leaves may be dorsiventral or isobilateral with salt secreting glands.	A special type of negatively geotropic roots called pneumatophores with pneumathodes to get sufficient aeration are present. They are called breathing roots. Example: Avicennia

Q.3) Consider the following pairs:

Terms	*Meaning*
1. Population	Includes all the populations occupying a given area.
2. Community	Organisms of the same species that are in proximity to one another.
3. Biome	Large regional or sub continental ecosystem characterized by similarity in climate and vegetation.

Which of the pairs given above is/are correct?

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

Q.3) Solution (b)

Explanation

Pair 1	Pair 2	Pair 3
Incorrect	**Incorrect**	**Correct**
Population	**Community**	**Biome**
It refers to the organisms of the same species that are in proximity to one another.	It includes all the populations occupying a given area.	It refers to large regional or sub continental ecosystem characterized by similarity in climate and vegetation.

For example a group of rabbits.	The size of a community depends on our scale of reference. We might use Community to refer to all of the living things in a particular area like a pond or we might restrict our interest to the fish community or the plant	It is made of many similar ecosystem.

Q.4) Consider the following pairs:

Terms	*Meaning*
1. Amensalism	One species benefits, while the other species (the host) is neither harmed nor inhibited.
2. Commensalism	Interaction is favourable to both species.
3. Competition	Beneficial to one species and harmful to the other species.

Which of the pairs given above is/are correct?

a) 2 and 3 only
b) 1 and 3 only
c) 1,2 and 3
d) None of the above

Q.4) Solution (d)

Explanation

Different biological interactions

Mutualism: both species benefit. • Example: in pollination mutualism is seen, the pollinator gets food (pollen, nectar), and the plant has its pollen transferred to other flowers for cross-fertilization (reproduction).
Commensalism: one species benefits, the other is unaffected. • Example: Cow dung provides food and shelter to dung beetles. The beetles have no effect on the cows.
Competition: both species are harmed by the interaction. • Example: If two species eat the same food, and there isn't enough for both, both may have access to less food . They both suffer a shortage of food
Predation and parasitism: one species benefits, the other is harmed. • Example: Parasitism: tick gains benefit by sucking blood; host is harmed by losing blood.
Amensalism: One species is harmed, the other is unaffected. • Example: A large tree shades a small plant, retarding the growth of the small plant. The small plant has no effect on the large tree.
Neutralism: There is no net benefit or harm to either species.

Q.5) Which of the following statements are correct about the invasive species?

1. An invasive species is a non-native organism that causes ecological harm after being introduced to a new environment.
2. Invasive species can cause extinction of endogenic species.
3. Invasive species are always a predator which reduces population of local species.

Select the code from below:

a) 1 and 2

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

Q.5) Solution (a)

Invasive Species

- An invasive species is a non-native organism that causes ecological harm after being introduced to a new environment.
- Once they enter a new ecosystem, they can outcompete native organisms for resources like food, especially if they lack natural predators.
- Some invasive species also carry diseases that kill native organisms and many will consume native plants and animals. Invasive species can ultimately cause the decline or extinction of native species, decreasing biodiversity in an ecosystem.
- Humans are responsible for the spread of a majority of earth's invasive species, often carrying them to different parts of the world on ships.
- Invasive species are not necessarily predating.

Q.6) Nitrogen fixation on the earth is facilitated by various processes like –

1. By microorganisms
2. Artificially using industrial processes
3. By Atmospheric processes like thunder and lighting

Which of the statements given above is/are correct?

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

Q.6) Solution (d)

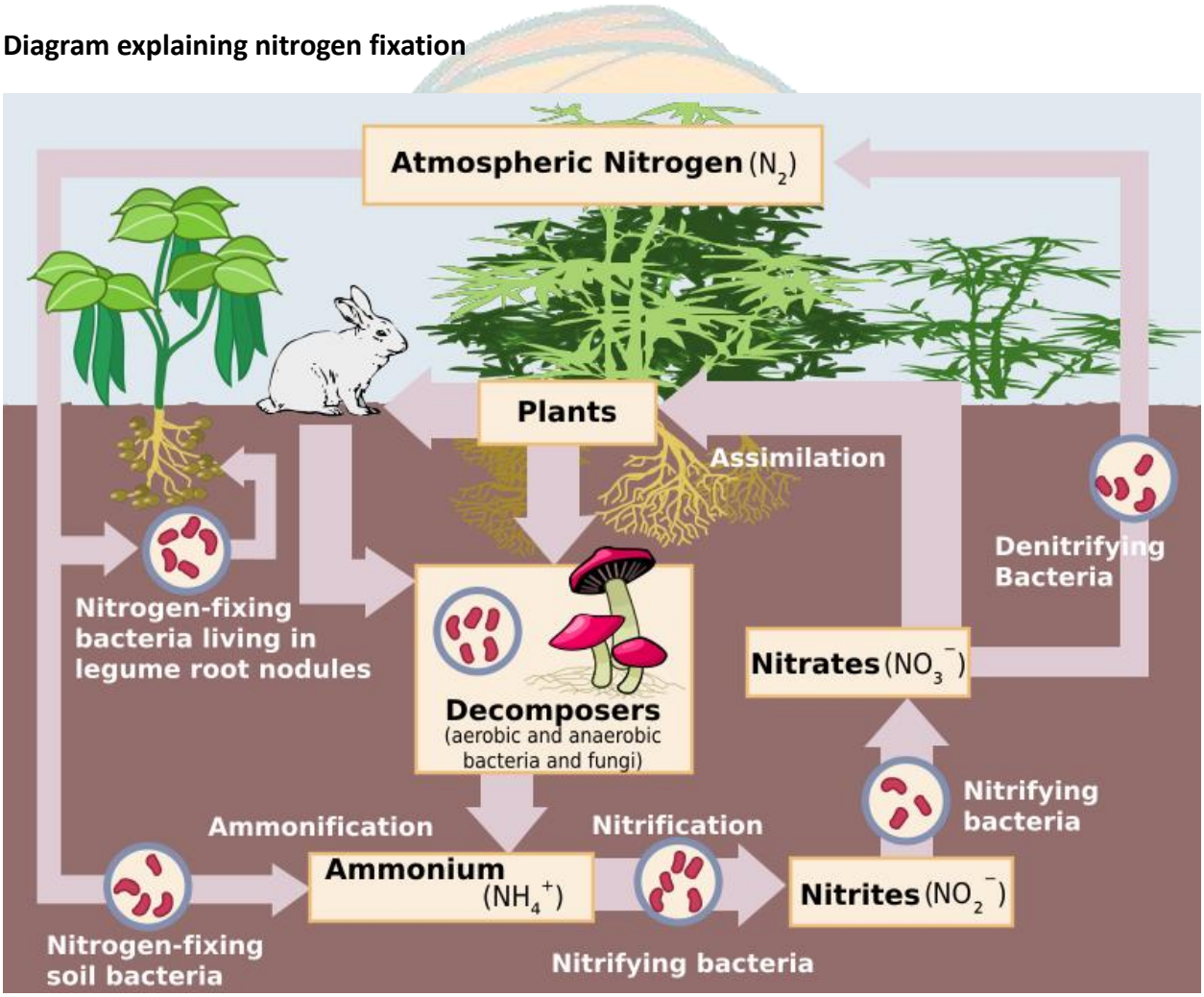
Explanation

Statement 1	Statement 2	Statement 3

Correct	Correct	Correct
Biological Fixation	**Industrial Fixation**	**Atmospheric Fixation**
The ability to fix nitrogen is found only in certain bacteria and archaea. Some live in a symbiotic relationship with plants of the legume family (e.g., soybeans, alfalfa). Some establish symbiotic relationships with plants other than legumes (e.g., alders). Some establish symbiotic relationships with animals, e.g., termites and "shipworms" (wood-eating bivalves). Some nitrogen-fixing bacteria live free in the soil. Nitrogen-fixing cyanobacteria are essential to maintaining the fertility of semi-aquatic environments like rice paddies. Biological nitrogen fixation requires a complex set of enzymes and a huge expenditure of ATP. Although the first stable	Under great pressure, at a temperature of 600°C, and with the use of a catalyst, atmospheric nitrogen and hydrogen (usually derived from natural gas or petroleum) can be combined to form ammonia (NH_3). Ammonia can be used directly as fertilizer, but most of it is further processed to urea and ammonium nitrate (NH_4NO_3).	The enormous energy of lightning breaks nitrogen molecules and enables their atoms to combine with oxygen in the air forming nitrogen oxides. These dissolve in rain, forming nitrates that are carried to the earth. Atmospheric nitrogen fixation probably contributes some 5–8% of the total nitrogen fixed.

product of the process is ammonia, this is quickly incorporated into protein and other organic nitrogen compounds.		

Diagram explaining nitrogen fixation



Q.7) Consider the following statements with respect to Ecological Succession?

1. Primary succession is relatively faster as compared to secondary succession.

2. Succession would occur faster in area existing on the bank of the large continent because of existence of more humidity in the soil.
3. Ecological succession leads to the establishment of a relatively stable climax community.

Which of the statements given above is/are correct?

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

Q.7) Solution (c)

Statements explanation

Statement 1	Statement 2	Statement 3
Incorrect	**Incorrect**	**Correct**
As secondary succession starts on a well-developed soil already formed at the site. Thus secondary succession is relatively faster as compared to primary succession which may often require hundreds of years. **So statement 1 is wrong**.	**Succession would occur faster in area existing in the middle of the large continent.** **So statement 2 is incorrect**. This is because, here all propagules or seeds of plants belonging to the different seres would reach much faster, establish and ultimately result in climax community	Succession is a universal process of directional change in vegetation, on an ecological time scale. Succession is a progressive series of changes which leads to the establishment of a relatively stable climax community. **So statement 3 is correct.** Succession occurs when a series of communities replace one another due to large scale destruction either natural or

		manmade. This process continues - one community replacing another community, until a stable, mature community develops.

Q.8) Consider the following statements about the ecotone:

1. It defines a unique functional role or place of a species in an ecosystem.
2. Mangrove forests can be considered as an example of ecotone.
3. Ecotone will have larger population densities than the communities on either side.

Which of the statements given above is/are correct?

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

Q.8) Solution (b)

Explanation

Statement 1	Statement 2	Statement 3
Incorrect	**Correct**	**Correct**
A niche is the unique functional role or place of a species in an ecosystem not Ecotone. **So, statement 1 is incorrect.**	Mangrove forests are the best example for represent an Ecotone between marine and terrestrial ecosystem. Other Examples are – grassland, estuary and river bank.	Ecotone often has a large number of species and larger population densities than the communities on either side.

Q.9) Consider the following statements with respect to Adaptations:

1. Aestivation takes place during times of heat and dryness only by terrestrial animals.
2. Hibernation is the type of winter sleep characterized by lower body temperature, slower breathing, and lower metabolic rate.

Which of the following statement given above is/are correct?

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

Q.9) solution (b)

Explanation

Aestivation

Aestivation is a state of animal dormancy, characterized by inactivity and a lowered metabolic rate that is entered in response to high temperatures and arid conditions. It takes place during times of heat and dryness, the hot dry season, which is often but not necessarily the summer months. Invertebrate and vertebrate animals are known to enter this state to avoid damage from high temperatures and the risk of desiccation. Both terrestrial and aquatic animals undergo aestivation.

Hibernation

Hibernation is a state of inactivity and metabolic depression in animals, characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve food, especially during winter when food supplies are limited, tapping energy reserves, body fat, at a slow rate. It is the animal's slowed metabolic rate which leads to a reduction in body temperature and not the other way around.

Q.10) Consider the following statements about Phytoplankton

1. They contribute more than half of the oxygen in the environment.
2. They reduce global warming by absorbing human-induced carbon dioxide

3. They are not found in freshwater systems.

Which of the following statements given above is/are correct?

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

Q.10) solution (a)

Explanation

Phytoplanktons are tiny microscopic floating plants found in water bodies.

Significance of Phytoplanktons:

- They contribute more than half of the oxygen in the environment.
- They reduce global warming by absorbing human-induced carbon dioxide.
- They also serve as the base of the ocean food chain.
- They are important bio indicators regulating life in oceans. Their abundance determines the overall health of the ocean ecosystem.
- They are found in all such water systems, including marine or brackish or fresh. About 1% of the global biomass is due to phytoplankton.

Q.11) Consider the following statements and identify the *incorrect* statement with respect to the food chain:

a) Detritus food chain releases energy into the ecosystem whereas grazing food chain utilizes energy from the ecosystem.
b) Detritus food chain helps in fixing inorganic nutrients.
c) Detritus food chain is usually smaller compared to the grazing food chain.
d) Energy for the grazing food chain is obtained directly from the sunlight.

Q.11) Solution (a)

Explanation

Grazing food chain	Detritus food chain
In this food chain, producers serves as the primary source of energy and constitute the first trophic level.	In this food chain, dead and decaying matter serves as the primary source of energy. Detritivores or decomposers feed on this matter and releases the nutrients back into the atmosphere.
Energy for the grazing food chain is obtained directly from the sunlight.	Energy for the detritus food chain is obtained from the organic debris
Grazing food chain releases energy into the ecosystem.	Detritus food chain utilizes energy from the ecosystem.
Grazing food chain helps in adding energy.	Detritus food chain helps in fixing inorganic nutrients.
Grazing food chain involves all macroscopic organisms.	Detritus food chain involves subsoil organisms, which can be macroscopic or microscopic.

Q.12) Consider the following statements with respect to mangrove ecosystem in India:

1. Gujarat has the highest percentage of area under total mangrove cover among the state and UTs.
2. The mangrove cover in India is 5% of the country's total geographical area.
3. India State of Forest Report, 2019 reports a decrease of 54 sq. km in mangrove cover from the previous assessment.

Which of the statements given above is/are *incorrect*?

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

d) 1 only

Q.12) solution (b)

Statements Explanation

Statement 1	***Statement 2***	***Statement 3***
Incorrect	***Incorrect***	***Incorrect***
Among the states and UTs, West Bengal has the highest percentage of area under total Mangrove cover followed by Gujarat and Andaman Nicobar Islands.	The mangrove cover in India is 4,975 sq. km, which is 0.15% of the country's total geographical area.	It reports Increase in the mangrove cover as compared to 2017 assessment of 54 sq. km.

Q.13) Which of the following statement best reflects the meaning of ecology?

a) Structural and functional unit of biosphere interacting and exchanging materials between them.
b) The sum total of living, non-living components; influences and events, surrounding an organism
c) Large areas of the Earth's surface within which organisms have been evolving over long periods of time.
d) Study of the relationship of the living organisms with each other and with their environment.

Q.13) Solution (d)

Explanation

Statement 1	***Statement 2***	***Statement 3***	***Statement 4***

Ecosystem	***Environment***	***Ecozones***	***Ecology***
An ecosystem is defined as a structural and functional unit of biosphere consisting of community of living beings and the physical environment, both interacting and exchanging materials between them. It includes plants, trees, animals, fish, birds, micro-organisms, water, soil, and people.	Everything that surrounds or affects an organism during its life time is collectively known as its environment. The environment is defined as 'the sum total of living, non-living components; influences and events, surrounding an organism.	Ecozones delineate large areas of the Earth's surface within which organisms have been evolving in relative isolation over long periods of time, separated from one another by geographic features, such as oceans, broad deserts, or high mountain ranges, that constitute barriers to migration.	Ecology is defined "as a scientific study of the relationship of the living organisms with each other and with their Environment." It deals with the ways in which organisms are molded by their environment, how they make use of environmental resources including energy flow and mineral cycling.

Q.14) With reference to the marine organisms, consider the following statements:

1. Kelp forests are underwater forests that thrive well in cold, nutrient rich waters.
2. Kelp forests are always coastal and require shallow, relatively clear water.
3. They represent the highest rates of primary production of any natural ecosystem on Earth.

Which of the statements given above is/are correct?

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

Q.14) solution (d)

Basic Information

About Kelp Forests

- Kelp forests are underwater forests that thrive well in cold, nutrient rich waters.
- Kelps are large brown algae seaweeds attached to the seafloor and eventually grow to the water's surface and rely on sunlight to generate food and energy.
- These forests are always coastal and require shallow, relatively clear water.
- These forests harbor a greater variety and higher diversity of plants and animals than almost any other ocean community.
- In regions with cold, nutrient-rich water, they can attain some of the highest rates of primary production of any natural ecosystem on Earth.
- Kelp forests have been observed throughout the Arctic by Inuit, researchers and polar explorers. The Canadian Arctic alone represents 10 per cent of the world's coastlines.

Q.15) Consider the following statements about the energy pyramid:

1. Energy pyramid can be both upward and downward.
2. Under pyramid of biomass individuals in each trophic level are counted instead of being weighted.
3. Pyramid of number will always be upright.

Which of the statements given above is/are *incorrect*?

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

Q.15) Solution (c)

Explanation

Statement 1 **(Incorrect)**	**Statement 2** **(Incorrect)**	**Statement 3** **(Incorrect)**
Pyramid of energy	**Pyramid of Biomass**	**Pyramid of number**

To compare the functional roles of the trophic levels in an ecosystem, an energy pyramid is most suitable. An energy pyramid reflects the laws of thermodynamics, with conversion of solar energy to chemical energy and heat energy at each trophic level and with loss of energy being depicted at each transfer to another trophic level. Hence the pyramid is always upward, with a large energy base at the bottom. **So, statement 1 is wrong.**	In Pyramid of Biomass individuals in each trophic level are weighed instead of being counted. This gives us a pyramid of biomass, i.e., the total dry weight of all organisms at each trophic level at a particular time. **So, statement 2 is also wrong.**	It is a graphic representation of the total number of individuals of different species, belonging to each trophic level in an ecosystem. Depending upon the size and biomass, the pyramid of numbers may not always be upright, and may even be completely inverted. So statement 3 is also wrong.

Q.16) Which of the following can be possible cause of the coral bleaching?

1. Increased sedimentation in the ocean water
2. Increased level of carbon dioxide in the ocean water
3. Overfishing

Choose correct code:

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

Q. 16) Solution (c)

Explanation

When corals are stressed by changes in conditions such as temperature, light, or nutrients, they expel the symbiotic algae living in their tissues, causing them to turn completely white. There

are various reasons for the coral bleaching like:

- Increased (most commonly due to global warming), or reduced water temperature.
- Oxygen starvation caused by an increase in zooplankton levels as a result of overfishing.
- Increased solar irradiance (photosynthetically active radiation and ultraviolet light.
- Changes in water chemistry (in particular acidification caused by CO2 pollution)
- Increased sedimentation (due to silt runoff)
- Bacterial infections; Changes in salinity; Herbicides; Low tide and exposure; Cyanide fishing.
- Overfishing resulting in the disturbance of optimal condition for the growth of corals.

Q.17) Consider the following statements with respect to Phosphorus cycle in an ecosystem:

1. Phosphorus cycle is part of the gaseous cycle.
2. The largest reservoir of the phosphorus in the biosphere is the atmosphere.

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.17) solution (d)

Explanation

Phosphorus cycle

Phosphorus plays a central role in aquatic ecosystems and water quality. Unlike carbon and nitrogen, which come primarily from the atmosphere, phosphorus occurs in large amounts as a mineral in phosphate rocks and enters the cycle from erosion and mining activities. The largest reservoir of the Phosphorus in the biosphere is the mineral rocks.

By the process of weathering and erosion phosphates enter rivers and streams that transport them to the ocean. In the ocean once the phosphorus accumulates on continental shelves in the form of insoluble deposits. After millions of years, the crustal plates rise from the sea floor and expose the phosphates on land. After more time, weathering will release them from rock and the cycle's geochemical phase begins again.

Q.18) Which of the following are the effects of Eutrophication?

1. Shifting in various species component as well as habitat of an ecosystem.
2. The decrease in water transparency and turbidity.
3. Decreased biomass of algae.
4. Growth of coral reefs.

Choose correct answer:

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

Q.18) solution (a)

Explanation

Statement 1	Statement 2	Statement 3	Statement 4
Correct	Correct	Incorrect	Incorrect

Eutrophication results in other effect known as the bottom-water hypoxia, which enhances water acidification and altering biogeochemical processes. The hypoxia conditions in bottom waters cause escape of sensitive demersal and other benthic fishes, mortality of bivalves, echinoderms and crustaceans, and extreme loss of benthic diversity.	One of the main environmental effects of eutrophication is increase of suspended particles and decrease of water clarity.	Eutrophication results in the large scale algal bloom rather than decrease in the biomass of Algae. It results into extensive macro algal blooms.	Eutrophication disturbs the optimal condition required for the growth of coral reefs like clear water little pollution nutrient poor water etc.

Q.19) In an Aquatic ecosystem arrange the following in terms of decreasing productivity (Highest first to lowest last)

1. Estuaries
2. Open ocean
3. Continental shelf
4. Lakes and streams

Which of the following option is correctly arranged?

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

Q.19) solution (c)

Explanation

The correct order of decreasing productivity in an aquatic ecosystem is :

1. Estuaries (Most productive)
2. Lakes and streams
3. Continental shelf
4. Open ocean (Least productive)

Q.20) consider the following statements with respect to the movements of pollutants in the organisms.

1. In Bio-magnification there is a decrease in concentration of a pollutant from one link in a food chain to another.
2. Bio-magnification refers to an increase in concentration of a pollutant from the environment to the first organism in a food chain.

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.20) solution (d)

Basic Information

Biomagnification

- Biomagnification refers to the tendency of pollutants to concentrate as they move from one trophic level to the next.
- In order for Biomagnification to occur, the pollutant must be: long-lived, mobile, soluble in fats, biologically active

Statements analysis:

Statement 1	Statement 2

Incorrect	Incorrect
An increase in concentration of a pollutant from the environment to the first organism in a food chain is called Bioaccumulation not Biomagnification.	In Biomagnification there is an increase in concentration of a pollutant from one link in a food chain to another.

Q.21) Consider the following pairs:

Mangrove sites	*States*
1. Coringa, East Godavari, Krishna	Andhra Pradesh
2. Achra-Ratnagirii, Vaitarna	Gujarat
3. Bhitarkanika and Subernarekha	Odisha
4. Pichavaram and Pulicat	Karnataka

Which of the pairs given above is/are correct?

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

Q.21) solution (a)

Explanation

Important mangrove sites and their location

State/Union Territories	Mangrove Sites

1. West Bengal	• Sunderbans
2. Orissa	• Bhaitarkanika • Mahanadi • Subarnarekha • Devi-Kauda • Dhamra • Mangrove Genetic Resources Centre • Chilka
3. Andhra Pradesh	• Coringa • East Godavari • Krishna
4. Andaman & Nicobar	• North Andaman Nicobar
5. Tamil Nadu	• Pichavaram • Muthupet • Ramnad • Pulicat Kaznuveli
6. Kerala	• Vembanad • Kannur
7. Karnataka	• Coondapur

	• Dakshin Kannada/ Hannavar • Karwar • Mangalore Forest Division
8. Maharashtra	• Achra-Ratnagiri • Dev garh-Vijay • Durg • Veldur • Kundalika-Revdnada • Mumbra-Diva • Vikroli • Shreevardhan • Vaitarna • Vasai-Manori • Malvan
9. Gujarat	• Gulf of Kutchh • Gulf of Khambhat • Dumas-Ubhrat

Q.22) Consider the following pairs:

Sea Port	***Country***
1. Sabang	Myanmar
2. Duqm	Iran
3. Changi	Malaysia

Which of the pairs given above are correctly matched?

a) 1 and 2 only
b) 3 only
c) 1 and 3 only
d) None of the these

Q.22) Solution (d)

Sabang Port – Indonesia

Duqm port – Oman

Port of Changi – Singapore

Q.23) Which of the following is the Cleanest capital city as per the Swachh Survekshan 2020?

a) New Delhi
b) Panaji
c) Bengaluru
d) Gandhinagar

Q.23) Solution (a)

Swachh Survekshan 2020 awards are an annual ranking exercise taken up by the Ministry of Housing and Urban Affairs (MoHUA).

- It seeks to assess urban areas of country on their levels of cleanliness and active implementation of Swachh Bharat Abhiyan in a timely & innovative manner.
- Indore emerged as the cleanest Indian city fourth time in a row followed by Surat.
- Cleanest State of India (> 100 Urban Local Bodies category) : Chhattisgarh.

- Cleanest State of India (<100 ULB category) : Jharkhand
- Cleanest town along the banks of river Ganga: Varanasi
- **Cleanest capital city: New Delhi** (Union Territory of New Delhi) and the NDMC.
- Cleanest city with over 40 lakh population: Ahmedabad

Q.24) Which of the following is/are the advantages/benefits of constituting an independent Fiscal Council?

1. Boost accuracy of fiscal projections and helps countries stick to fiscal rules better
2. Discourage populist shift of Government Expenditure
3. Helps to raise the level of debate in Parliament

Select the correct answer using the code given below:

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

Q.24) Solution (d)

A Fiscal Council is an independent fiscal institution (IFI) with a mandate to promote stable and sustainable public finances. The council assist in calibrating sustainable fiscal policy by making an objective and scientific analysis.

14th Finance Commission had recommended the establishment of an independent Fiscal Council.

Merits of Fiscal Council

1. Watchdog of Public Finance: **An unbiased report to Parliament helps to raise the level of debate** and brings in greater transparency and accountability.

2. Reduces Populism: Costing of various policies and programmes can help to promote transparency over the political cycle to **discourage populist shifts in fiscal policy and improve accountability**.

3. Public Awareness: Scientific estimates of the cost of programmes and assessment of forecasts could help in raising public awareness about their fiscal implications and make people understand the nature of budgetary constraint.

4. Presence of an independent fiscal council **tends to boost accuracy of fiscal projections and helps countries stick to fiscal rules better**. In this way, the fiscal council will work as a conscience keeper in monitoring rule-based policies.

5. International Trend: According to IMF, there were 36 countries with IFIs in 2014 and more have been established in recent years

Q.25) The Abraham Accords is a normalization agreement between which of the following countries?

a) USA and Afghanistan
b) UAE and Israel
c) Israel and Palestine
d) Syria and USA

Q.25) Solution (b)

The Israel–United Arab Emirates normalization agreement, officially the Abraham Accords Peace Agreement: Treaty of Peace, Diplomatic Relations and Full Normalization Between the United Arab Emirates and the State of Israel, was initially agreed to in a joint statement by the United States, Israel and the United Arab Emirates (UAE) on August 13, 2020, officially referred to as the Abraham Accords.

The UAE thus became the third Arab country, after Egypt in 1979 and Jordan in 1994, to agree to formally normalize its relationship with Israel, as well as the first Persian Gulf country to do so.

The deal states that UAE would recognise the state of Israel and establish formal diplomatic relations with it, while Israel would halt its controversial plan to annex swathes of the

Palestinian West Bank.

Q.26) With reference to Kalinga school of Temple Architecture, consider the following statements:

1. It is a sub-style of Vesara temple architecture.
2. In this style, a temple is made in two parts, a tower called 'jagmohan' and a hall called 'deul'.
3. Lingaraj Temple of Bhubaneshwar is an example of this style.

Which of the statements given above is/are correct?

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

Q.26) Solution (c)

Statement 1	Statement 2	Statement 3
Incorrect	**Incorrect**	**Correct**
Kaḷinga architectural style is **a sub-style of Nagara architecture,** flourished in the ancient Kalinga region - present state of Odisha, West Bengal and northern Andhra Pradesh.	In Kalinga Architecture, basically a temple is made in two parts, a tower and a hall. **The tower is called deul and the hall is called jagmohan**. It is the deul or deula which makes three distinct types of temples in Kalinga Architecture - Rekha Deula, Pidha Deula and Khakhara Deula.	Examples of Kalinga architecture are **Lingaraj Temple**, Mukteshwar Temple and Rajarani temple of Bhubaneshwar; Konark Sun Temple; Kishakeshwari Temple in Mayurbhanj district.

Q.27) A programme of Kerala named 'Namath Basai' is related to which of the following?

a) Rehabilitation of flood affected
b) Social security for unorganized sector
c) Water conservation
d) Tribal education

Q.27) Solution (d)

Namath Basai, the Kerala State government's unique programme of teaching tribal children in their mother tongue.

- The programme is being implemented by the SamagraShiksha Kerala (SSK). SSK is a programme for the school education sector (pre-school to class 12).
- Namath Basai offers pre-recorded classes through a YouTube channel. It is available in three tribal languages of the Irula, Muduka and Kurumba tribes.

Q.28) With reference to National Digital Health Mission (NDHM) which of the following statements is/are correct?

1. DigiDoctor and Health Facility Registry (HFR) are some of the key building blocks of the NDHM.
2. National Health Authority will design, build, roll-out and implement the NDHM.
3. Components like Health ID and Digi-Doctor are owned and operated by private players.

Select the correct answer using the code given below:

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

Q.28) Solution (a)

National Digital Health Mission (NDHM) is a voluntary healthcare programme that aims to reduce the gap among stakeholders such as doctors, hospitals, citizens etc by connecting them in an integrated digital health infrastructure.

Its vision is to create a national digital health ecosystem that supports universal health coverage in an efficient, accessible, inclusive, affordable, timely and safe manner.

Statement 1	Statement 2	Statement 3
Correct	**Correct**	**Incorrect**
Six key building blocks or digital systems of NHDM are: HealthID, **DigiDoctor,** Health Facility Registry (HFR), Personal Health Records (PHR), e-Pharmacy & Telemedicine.	**National Health Authority (NHA)**, the attached office of the Ministry of Health & Family Welfare has been given the mandate to design, build, roll-out and implement the NDHM in the country.	**The Government of India will own, operate and maintain the core building blocks of NDHM such as Health ID, Digi-Doctor and HFR**. Components, like Personal Health Records (PHR) and Electronic Medical Records (EMR) solutions can be developed by private players, in line with the official guidelines issued by the government.

Q.29) With reference to 'Boreal Summer Intra Seasonal Oscillation (BSISO)' sometimes mentioned in the news while forecasting waves along coasts, which of the following statements is/are correct?

1. BSISO is the transfer of heat from western Pacific Ocean to Indian Ocean during the monsoon period.
2. The active phase of BSISO enhances surface waves.

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.29) Solution (b)

Statement 1	Statement 2
Incorrect	**Correct**
Boreal Summer Intra Seasonal Oscillation (BSISO) is the transfer of heat from Indian Ocean to western Pacific Ocean roughly every 10-50 days during the monsoon (June-September).	BSISO represents the monsoon's 'active' and 'break' periods, in which weeks of heavy rainfall give way to brilliant sunshine before starting all over again. **The active phase enhances monsoon winds and hence the surface waves.**

Q.30) Which of the following WHO region is yet to be certified as free of wild poliovirus?

a) Eastern Mediterranean
b) South-East Asia Region
c) African Region
d) Western Pacific Region

Q.30) Solution (a)

World Health Organization (WHO) has certified African region free of wild polio. **With this five of six WHO regions, except Eastern Mediterranean** which includes Afghanistan and Pakistan, are certified free of wild poliovirus.

- For certification, all countries in WHO Region need to have no case of wild polio for 3 consecutive years.
- Other WHO regions which are declared free of wild polio along with year in bracket are: Region of the Americans (1994); Western Pacific Region (2000); European Region (2002) and South-East Asia Region (2014). India is in South-East Asia Region of WHO

Q.31) First bunch of bananas has 1/4 times the bananas in the second bunch and again as many bananas as in the second bunch. If the second bunch has 3 bananas less than the first bunch, what is the number of bananas in the first bunch?

a) 9

b) 12
c) 15
d) 20

Q.31) Solution (c)

Let the number of bananas in the second bunch be X.

Then, the number of bananas in the first bunch = X + 1/4 X = 5/4 X

So,

5/4 X - X = 3

5X – 4X = 12

X = 12

Number of bananas in first bunch = 5/4 x 12 = 15

Q.32) Rahul goes to a party with his friends.16 persons shake hands with one another in a party. In total how many shake hands took place?

a) 124
b) 120
c) 165
d) 170

Q.32) Solution (b)

Total possible ways = $^{16}C_2$

= (16 x 15)/ (2 x 1) = 120

Directions for the following 3 (three) items:

Read the following two passages and answer the items that follow. Your answers to these items should be based in the passage only.

Passage 1

Vivekananda realizes that mankind is passing through a crisis. The tremendous emphasis on the scientific and mechanical ways of life is fast reducing man to the status of a machine. Moral and religious values are being undermined. The fundamental principles of civilization are being ignored. Conflicts of ideals, manners and habits are pervading the atmosphere. Disregard for everything old is the fashion of the day. Vivekananda seeks the solutions of all these social and global evils through education. With this end in view, he feels the dire need of awakening man to his spiritual self-wherein, he thinks, lies the very purpose of education.

Vivekananda points out that the defect of the present-day education is that it has no definite goal to pursue. A sculptor has a clear idea about what he wants to shape out of the marble block; similarly, a painter knows what he is going to paint. But a teacher, he says, has no clear idea about the goal of his teaching. Swamiji attempts to establish, through his words and deeds, that the end of all education is man-making. He prepares the scheme of this man-making education in the light of his overall philosophy of Vedanta. According to Vedanta, the essence of man lies in his soul, which he possesses in addition to his body and mind. In true with this philosophy, Swamiji defines education as 'the manifestation of the perfection already in man.' The aim of education is to manifest in our lives the perfection, which is the very nature of our inner self. This perfection is the realization of the infinite power which resides in everything and every-where-existence, consciousness and bliss (Satchidananda). After understanding the essential nature of this perfection, we should identify it with our inner self. For achieving this, one will have to eliminate one's ego, ignorance and all other false identification, which stand in the way. Meditation, fortified by moral purity and passion for truth, helps man to leave behind the body, the senses, the ego and all other non-self-elements, which are perishable. He thus realizes his immortal divine self, which is of the nature of infinite existence, infinite knowledge and infinite bliss.

Q.33) According to the passage what is PERFECTION?

a) Things are proper at top to bottom.
b) There is no scope for undone things
c) It is an expression of mankind
d) Nature of inner-self and realization of infinite power.

Q.33) Solution (d)

Option 'd' is correct answer because as mentioned 'The aim of education is to manifest in our

lives into perfection, which is the very nature of our inner self. This perfection is the realization of the infinite power which resides in everything and everywhere as in consciousness and bliss (Satchidananda)

Q.34) According to the paragraph what is the purpose of Education?

1. Obtain the clear goal of teaching.
2. To understand that the end of all education is man making
3. Education should be free learning
4. Education is everything.

Select the correct answer using the codes below:

a) 2 only
b) 3 and 4 only
c) Neither 1 and 2 nor 3 and 4
d) All of above

Q.34) Solution (a)

Option 'a' is the correct answer because as mentioned in the passage painter knows what to paint, sculptor know what shape he wants to make but how many teachers know clearly what to teach for man making. So, the system should be able to make good man in all aspects.

Passage 2

A German proverb proclaims that a man is what he eats. It could equally have insisted that he is also what he does not eat. Indeed, a man is also what he wears, speaks, believes, worships, smells, the music he listens to, how he dances and the colours that entice him. This list can multiply, and multiply differently for different people. Human diversity is rich and immense.

India's own diversity is among the richest: countless culinary habits, dress, customs and musical traditions; more than 200 different dialects and languages; religious and doctrinal diversity, the ritual-oriented Vedic practices, the teachings of Buddha, Mahavira, Zarathustra, the Torah, and Guru Nanak, the religiosity in the Puranas, Islam, Syriac-Christianity, the great varieties of animism and atheism.

Q.35) What is the author talking about in the passage?

a) Diversity of humans as a whole as well as India's own diversity.
b) India's rich diversity only.
c) Religious and doctrinal diversity of India.
d) The greatness of Indian traditions.

Q.35) Solution (a)

In the first paragraph the author talks about the diversity of humans as whole and in the second paragraph he talks about India's diversity. Hence option 'a' is correct.