

Q.1) Consider the following statements about GreenCo Rating System.

1. It facilitates companies in improving their overall green performance.
2. It is applicable to manufacturing facilities only.

Which of the above statements is/are correct?

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

Q.1) Solution (a)

Pursuing sustainable growth through preserving the environment is one of the hallmarks of Indian Railways. To further spread its green initiatives, Indian Railways had entered into partnership with the Confederation of Indian Industry (CII) in July 2016. As part of this partnership, CII is facilitating various railways' production units, workshops and other units go the Green way and, in the process, equipping them to green the operations and practices.

CII's GreenCo Rating **System is a first-of-its-kind rating in the world that facilitates companies in improving their overall green performance.** GreenCo focus on major environmental areas including- energy efficiency, renewable energy, water conservation, waste management, resource conservation, green supply chain, product stewardship and life cycle assessment.

It is applicable to both manufacturing facilities and service sector units.

Do you know?

- Green Rating for Integrated Habitat Assessment (GRIHA) is India's own rating system jointly developed by TERI and the Ministry of New and Renewable Energy, Government of India. It is a green building design evaluation system where buildings are rated in a three-tier process.

THINK!

- Leadership in Energy & Environmental Design India

(Source <http://pib.nic.in/newsite/PrintRelease.aspx?relid=178627>)

Q.2) Solar Radiation Management Governance Initiative is

- a) Intergovernmental organization
- b) NGO-driven project
- c) Legally binding treaty
- d) Environment based research group

Q.2) Solution (b)

The Solar Radiation Management Governance Initiative is an international, NGO-driven project that seeks to expand the global conversation around the governance of SRM geoengineering research.

The Royal Society, The academy of sciences for the developing world and Environmental Defense Fund (EDF) are its partners.

Do you know?

- Solar Geo-Engineering/Solar Radiation Management (SRM) is a process through which the reflectivity (albedo) of the Earth's atmosphere or surface is increased, in an attempt to offset some of the effects of GHG-induced climate change.

THINK!

- Carbon sequestration

(Source <http://www.srmgi.org/>)

Q.3) 'Trends.Earth' is

- a) An online platform that monitors "land degradation".
- b) An initiative by UNEP to increase awareness about degradation of soil.
- c) An organization working to increase forest area on the earth.
- d) An NGO that implements the UNCCD initiatives.

Q.3) Solution (a)

Trends.Earth is an online platform that monitors "land degradation" — the reduction or loss of the biological or economic productivity of land. Using satellite imagery and global data, Trends.Earth can identify degraded areas and help decision-makers improve them. Piloted in four African countries, the tool can now be used anywhere in the world.

The Sustainable Development Goals aim to achieve "land-degradation neutrality" - where the quality of land resources remains stable or increases - by 2030. Trends.Earth can support countries in achieving land-degradation neutrality. Without it, our future is not sustainable.

Do you know?

- UNCCD defines Land Degradation Neutrality (LDN) as a state whereby the amount and quality of land resources which is necessary to support ecosystem functions and enhance food security, remains stable or increases within specified temporal and spatial scales and ecosystems.

THINK!

- Global Land Outlook

Q.4) With regard to draft National Forest Policy, 2018, Consider the following statements.

1. It aims to set-up 3-tier institutions viz. National Board of Forestry (NBF), State Boards of Forestry and district Boards of Forestry.
2. Forest Skill Development Centers are part of this policy.

Which of the above statements is/are correct?

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

Q.4) Solution (b)

Recently, Ministry of Environment, Forests & Climate Change (MoEFCC) has released the draft National Forest Policy, 2018.

Setting up **National Board of Forestry (NBF)** at central level (headed by the Environment Minister) and **State Boards of Forestry at state** level (headed by state ministers in charge of forests) for ensuring inter-sectoral convergence, simplification of procedures, conflict resolution, etc. They will also periodically review implementation of this policy.

Forest Certification to enhance value of forest product harvested sustainably.

Forest Skill Development Centres, for skilling forest dependent population in forestry sector jobs, will be instituted for training of frontline staff who are at the cutting edge of the forest department.

Do you know?

- India targets a carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030.

THINK!

- REDD+

(Source <http://www.downtoearth.org.in/news/moef-releases-draft-national-forest-policy-2018-59898>

<https://www.livemint.com/Politics/YKRe5VogEJnpFzUdFKU0QJ/Government-unveils-draft-national-forest-policy.html>)

Q.5) International Conference on Sustainable Biofuels 2018 held in which of the following nation?

- a) India
- b) China
- c) Brazil
- d) Indonesia

Q.5) Solution (a)

The two-day international conference on Sustainable Biofuels is jointly being **organized by Department of Biotechnology, Govt. of India and Biofuture platform**. The event is bringing experts and delegates from 19 countries together in Sustainable Biofuels sector to take stock of current knowledge, share information and best practices, and build consensus on the actions most needed to move forward.

Do you know?

Mission Innovation (MI)

- It is a global initiative of 22 countries and the European Union to dramatically accelerate global clean energy innovation.
- It seeks to double investments in clean energy innovation over five years.
- Department of Biotechnology (DBT) is nodal agency of this mission in India.

THINK!

- Biofuture Platform

Q.6) World Sustainable Development Summit 2018 is the flagship forum of

- a) Sustainable Development Solutions Network.
- b) The Energy and Resources Institute (TERI)
- c) World Economic Forum.
- d) UNEP

Q.6) Solution (b)

World Sustainable Development Summit 2018 was inaugurated by Prime Minister in New Delhi.

It is a flagship forum of The Energy and Resources Institute (TERI) which has been conceptualized as a single platform to accelerate actions towards sustainable development and climate change.

Do you know?

- Energy Transitions Commission India was launched by The Energy and Resources Institute (TERI) on the sidelines of the World Sustainable Development Summit (WSDS) 2018. It is a unique, high-level, multi-stakeholder platform with experts from diverse fields to suggest pathways for energy and electricity sector transitions in India.

THINK!

- Global Commission on the Economy and Climate

Q.7) Consider the following statements about Net Present Value [NPV] Of Forest.

1. It is defined under Forest Rights Act 2006.
2. It is calculated for a period of 50 years.
3. It is the amount paid by the project proponent for diverting land for non-forest use to compensate the loss in ecosystem services.

Which of the above statements is/are correct?

- a) 1 and 2 only
- b) 2 and 3 only
- c) 1, 2 and 3
- d) None

Q.7) Solution (b)**NET PRESENT VALUE [NPV] of FOREST**

- It is defined under Forest (Conservation) Act of 1980.
- It is the amount paid by the project proponent for diverting land for non-forest use to compensate the loss in ecosystem services.
- It is calculated for a period of 50 years.
- For NPV estimation forests are categorized into six eco-classes, or forest types, and three canopy cover density classes—very dense forest, moderately dense forest and open forest.

Do you know?

- National Mission for a Green India or the Green India Mission (GIM), is one of the eight Missions outlined under India's action plan for addressing the challenge of climate change -the National Action Plan on Climate Change (NAPCC).

THINK!

- Ecosystem Services Improvement Project

Q.8) Which of the following are the physical processes responsible for the formation of Estuaries?

1. Rising sea level
2. Movement of sand and sandbars
3. Glacial processes
4. Tectonic processes

Select the appropriate code:

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

Q.8) Solution (a)**Explanation:**

Most estuaries can be grouped into four geomorphic categories based on the physical processes responsible for their formation:

- 1) Rising sea level
- 2) Movement of sand and sandbars
- 3) Glacial processes
- 4) Tectonic processes

Q.9) Consider the following two statements:

- 1) The Centre can declare any animal 'vermin', under the Wildlife Protection Act, 1972, following requests from the respective States.
- 2) 'Vermin' provision can be utilized within specified territories of the States, and outside forests and protected areas.

Which of the above given statement(s) is/are correct?

- a) 1 only
- b) 2 only
- c) Both
- d) None

Q.9) Solution (b)

Explanation:

- As per Section 62 of the Wildlife Protection Act, 1972, States can send a list of wild animals to the Centre requesting it to declare them vermin for selective slaughter. The Central Government may by notification, **declare any wild animal other than those specified in Schedule I and part 11 of Schedule H of the law to be vermin** for any area for a given period of time. As long as the notification is in force such wild animal shall be included in Schedule V of the law, depriving them of any protection under that law.
- This reprieve means that those who kill these animals here will, for a year after these notifications come into effect, not be subject to the jail terms and fines that hunting these animals typically invite.

Do you know?

Wildlife laws divide species into 'schedules' ranked from I to V. Schedule I members are the best protected, in theory, with severe punishments meted out to those who hunt them. Wild boars, nilgai and rhesus monkeys are Schedule II and III members — also protected, but can be hunted under specific conditions. Crows and fruit bat fall in Schedule 5, the vermin category.

Q.10) Consider the following statements in regard to Aquatic Ecosystem:

1. Neustons are unattached organisms which live at the air-water interface
2. Nektons are organisms which remain attached to stems and leaves of rooted plants and substances emerging above the bottom mud
3. Planktons includes both microscopic plants like algae and animals like crustaceans and protozoans
4. Benthos or benthic organisms are those found living in the bottom of the water mass

Which of the above given statement(s) is/are correct?

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

Q.10) Solution (c)

Explanation:

- Neustons are unattached organisms which live at the air-water interface such as floating plants
- Periphytons are organisms which remain attached to stems and leaves of rooted plants and substances emerging above the bottom mud such as sessile algae and their associated group of animals
- Planktons includes both microscopic plants like algae (phytoplanktons) and animals like crustaceans and protozoans (zooplanktons) found in all aquatic ecosystems, except certain swift moving waters.
- Nektons are groups which contains animals which are swimmers
- Benthos or benthic organisms are those found living in the bottom of the water mass

Q.11) Consider the following statements regarding Carbon Monoxide:

1. CO is naturally formed in human body.
2. CO is a normal neurotransmitter.
3. Too much of Carbon monoxide is poisonous for humans.

Which of the above statements are incorrect?

- a) 1 and 2
- b) 2 and 3

- c) 2 only
- d) None of the above

Q.11) Solution (d)

None of the above statement is incorrect.

Carbon monoxide is naturally produced by the action of heme oxygenase 1 and 2 on the heme from hemoglobin breakdown. This process produces a certain amount of carboxyhemoglobin in normal persons, even if they do not breathe any carbon monoxide. Following the first report that carbon monoxide is a normal neurotransmitter in 1993, as well as one of three gases that naturally modulate inflammatory responses in the body (the other two being nitric oxide and hydrogen sulfide), carbon monoxide has received a great deal of clinical attention as a biological regulator. In many tissues, all three gases are known to act as anti-inflammatories, vasodilators, and promoters of neovascular growth. Clinical trials of small amounts of carbon monoxide as a drug are ongoing. Nonetheless, too much carbon monoxide causes carbon monoxide poisoning.

Q.12) Consider the following statements regarding 'Dark Fermentation':

1. It is a method to produce Methane from solid Organic waste.
2. Dark fermentation differs from photofermentation in that it proceeds without the presence of light.

Which of the above statements are correct?

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

Q.12) Solution (b)

It is a method to produce Hydrogen as fuel from wastewater.

Dark fermentation is the biological H₂ production by fermentative conversion of organic substances in the absence of light. This process is differing from Photofermentation, which is the fermentative conversion of organic substances to biological H₂ by a diverse group of photosynthetic bacteria with the presence of light. The most important factor in these fermentations is presence or absence of *light*.

Anaerobic digestion is the breakdown of organic materials into biogas such as methane and carbon dioxide in the absence of oxygen, naturally or in an anaerobic digester. The most important factor in this process is the absence of **oxygen**.

Q.13) Which among the following awards has been instituted by the Government of India for individuals or communities from rural areas that have shown extraordinary courage and dedication in protecting Wildlife?

- a) Indira Gandhi Paryavaran Puraskar
- b) Medini Puruskar Yojana
- c) Amrita Devi Bishnoi Award
- d) Pitambar Pant National Award

Q.13) Solution (c)

Amrita Devi Bishnoi Award

This award is given for significant contribution in the field of wildlife protection, which is recognised as having shown exemplary courage or having done exemplary work for the protection of wildlife. A cash award of Rupees One lakh is presented to individuals/institutions involved in wildlife protection.

Q.14) Consider the following statements:

1. Ozone is generally formed in upper stratosphere and sinks to lower stratosphere.
2. Ozone is measured in Dobson Unit in stratosphere.

Which of the above statements are correct?

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

Q.14) Solution (c)

The upper stratosphere is also known as Chemosphere because of the chemical reactions taking place there.

A *dobson unit* is the most basic measure used in ozone research. One *Dobson Unit* (DU) is defined to be 0.01 mm thickness at STP (standard temperature and pressure).

Q.15) Consider the following statements with reference to Kalam Plant:

1. It is a new plant species identified in Western Ghats region.
2. It is a small shrub, just 1 metre tall and unisexual in nature.
3. The plant is considered "Critically Endangered"

Which of the statements given above is/are true?

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

Q.15) Solution (c)

Scientists from the Botanical Survey of India had recently identified a new plant species from two protected National Parks in West Bengal. Named *Drypetes kalamii*, it is a small shrub found to be shorter version of its close relative *Drypetes ellisii*.

Standing just 1 metre tall, the newly described plant is unisexual in nature, which means they have separate male and female plants.

The new species is found in wet, shaded areas of subtropical moist semi-evergreen forests, at a height ranging 50-100 metres. With pale yellow flowers in clusters and bright orange to red fruits, the plant is exclusive to the two national parks.

By following the IUCN (International Union for Conservation of Nature) rules, the scientists have provisionally assessed the plant to be "Critically Endangered". The report states forest fires and grazing as two plausible threats to the new species.

Q.16) Consider the following statements about Basel Convention:

1. It is an international treaty that was designed to reduce the movements of hazardous waste between nations.
2. It specifically focuses on to prevent transfer of hazardous waste from developed to less developed countries (LDCs).
3. **It also addresses the movement of radioactive waste between different nations.**

Select the correct code:

- a) 1 and 2

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

Q.16) Solution (a)

Basel Convention is an international treaty that was designed to reduce the movements of hazardous waste between nations.

It specifically focuses on to prevent transfer of hazardous waste from developed to less developed countries (LDCs).

It does not, however, address the movement of radioactive waste.

Q.17) The Energy Conservation Building Code (ECBC) was developed by an Expert Committee, set up by India's Bureau of Energy Efficiency. It provides design norms for which of the following?

1. Building envelope, including thermal performance requirements for walls, roofs, and windows.
2. Lighting system, including daylighting, and lamps and luminaire performance requirements.
3. HVAC system, including energy performance of chillers and air distribution systems.
4. Water heating and pumping systems, including requirements for solar hot-water systems.

Select the correct answer using the code given below.

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

Q.17) Solution (d)

The Energy Conservation Building Code (ECBC) 2017 unveiled by the government compares very favourably with international best practices, and if implemented correctly, could make new buildings producers of electricity rather than simply consuming energy, according to the Green Business Certification Institute.

The 2017 ECBC is an update of the Code first introduced in 2007. Since the applicability of such codes on buildings falls under the states' jurisdictions, the Centre could not mandate their adoption, meaning that the 2007 Codes were not widely adopted. The 2017 Codes seem to have met with more success, having already been adopted by 12 states.

The ECBC provides design norms for:

- Building envelope, including thermal performance requirements for walls, roofs, and windows;
- Lighting system, including daylighting, and lamps and luminaire performance requirements;
- HVAC system, including energy performance of chillers and air distribution systems;
- Electrical system; and
- Water heating and pumping systems, including requirements for solar hot-water systems.

In order for a building to be considered ECBC-compliant, it would need to demonstrate minimum energy savings of 25%. Additional improvements in energy efficiency performance would enable the new buildings to achieve higher grades like ECBC Plus or Super ECBC status leading to further energy savings of 35% and 50%, respectively.

With the adoption of ECBC 2017 for new commercial building construction throughout the country, it is estimated to achieve a 50% reduction in energy use by 2030. This will translate to energy savings of about 300 Billion Units by 2030 and peak demand reduction of over 15 GW in a year. This will be equivalent to expenditure savings of Rs 35,000 crore and 250 million tonnes of CO₂ reduction.

ECBC 2017 was developed by BEE with technical support from United States Agency for International Development (USAID) under the U.S.-India bilateral Partnership to Advance Clean Energy – Deployment Technical Assistance (PACE-D TA) Program.

Q.18) Consider the following pairs:

<i>Programme/ Project</i>	<i>Ministry</i>
1. National Lake Conservation Programme (NLCP) : : Ministry of Water Resources, River Development and Ganga Rejuvenation	
2. Desert Development Programme (DDP) : : Ministry of Environment, Forests and Climate Change	
3. The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) : : Ministry of Rural Development	

Which of the above pair(s) is/are correctly matched?

- a) 1 and 2 only
- b) 3 only
- c) 1, 2 and 3
- d) None

Q.18) Solution (b)

Correct pairs are given below:

- National Lake Conservation Programme (NCLP) is under Ministry of Environment, Forests and Climate Change
- Desert Development Programme (DDP) is under Ministry Rural Development.
- The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is under Ministry of Rural Development

Q.19) Observe the statements with regard to the general characteristics for Lake Ecology:

1. The nutrient content is very low in *Oligotrophic* whereas nutrient content is very high in *Eutrophic*
2. Oxygen in the hypolimnion (bottom layer) is present in *Eutrophic* whereas is absent in *Oligotrophic*.
3. Number of plant and animal species is fewer in *Eutrophic* whereas quite many species re present in *Oligotrophic*.

Choose the correct codes:

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

Q.19) Solution (b)

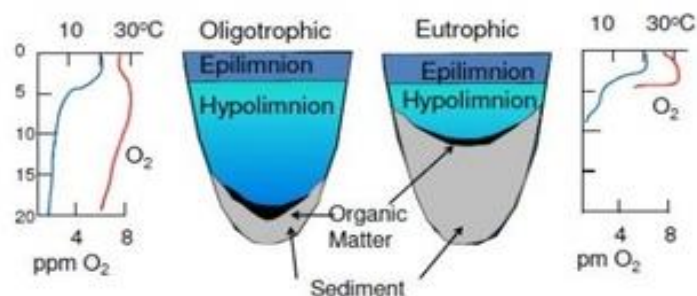
Like any organism, lakes are born as they originate by various geological and geomorphic events, and grow with time to change in their various morphological and functional characteristics and eventually die.

On the basis of their nutrient content, they are categorized as **Oligotrophic** (very low nutrients), **Mesotrophic** (moderate nutrients) and **Eutrophic** (highly nutrient rich).

Vast majority of lakes in India are either Eutrophic or Mesotrophic because of the nutrients derived from their surroundings or organic waste entering them.

- Oxygen in the hypolimnion (bottom layer) is absent in *Eutrophic* whereas is present in *Oligotrophic*.
- Number of plant and animal species is fewer in *Eutrophic* whereas quite many species are present in *Oligotrophic*.
- Aquatic plant production is low in *Oligotrophic* whereas high in *Eutrophic*
- Depth tend to be deeper in *Oligotrophic* whereas tend to be shallower in *Eutrophic*
- Total Salts or conductance is usually lower in *Oligotrophic* whereas sometimes higher in *Eutrophic*

Oligotrophic versus Eutrophic Lake Environments



Oligotrophic (less life) vs. Eutrophic (more life)

• Lakes



Figure 50.17 An oligotrophic lake in Grand Teton, Wyoming A eutrophic lake in Okavango delta, Botswana
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Q.20) Open-stunted forest with bushes and small trees having long roots and sharp thorns or spines are commonly found in

- a) Eastern Orissa
- b) North-eastern Tamil Nadu
- c) Shiwaliks and Terai regions
- d) Western Andhra Pradesh

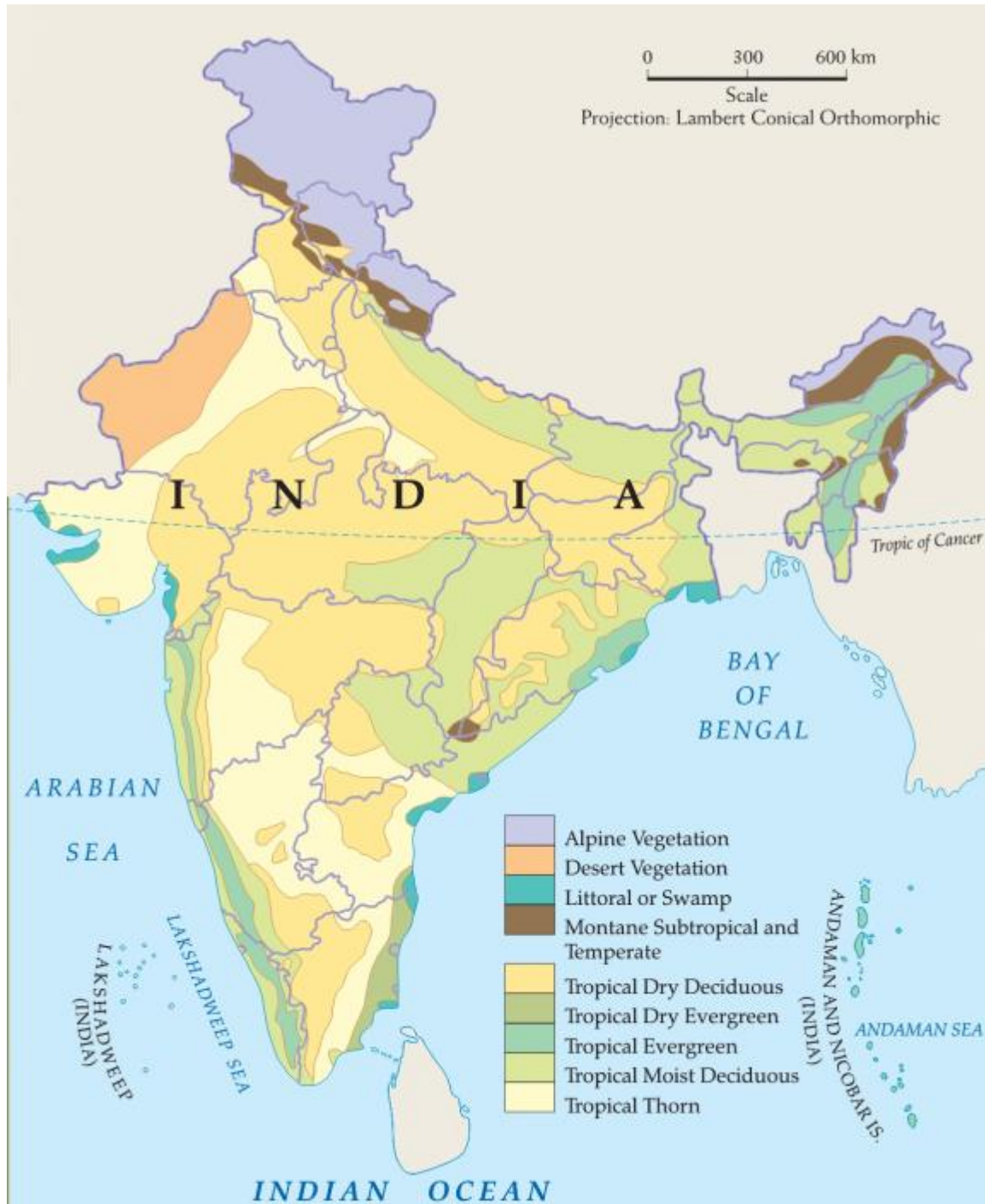
Q.20) Solution (d)

Open-stunted forest with bushes and small trees having long roots and sharp thorns or spines are common features of semi-arid or tropical thorn type of vegetation.

Eastern Orissa is wrong option since it has swamp/littoral and tropical evergreen and moist deciduous climate. Even North Eastern Tamil Nadu is ruled out as it has tropical dry evergreen as shown in figure below. (Refer to the map)

Shiwaliks and Terai regions are characterised by tall grasslands, scrub savannah, sal forests and clay rich swamps. They fall in tropical dry and moist deciduous.

Therefore, correct answer is Western Andhra Pradesh – which is characterized by Tropical thorn type of vegetation.



Q.21) Light pollution also known as photopollution has emerged as a new menace for the environment. Which of the following statements are correct about it?

1. Excessive brightening of the night sky by street lights and other man made sources is called light pollution.
2. Artificial lights overpower the darkness and affect the natural day-night pattern putting pressure on biological process of plants and animals.

3. It obstructs the vision of night sky.

Select the code from the following:

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

Q.21) Solution (d)

The inappropriate or excessive use of artificial light – known as light pollution – can have serious environmental consequences for humans, wildlife, and our climate. Components of light pollution include:

- Glare – excessive brightness that causes visual discomfort
- Skyglow – brightening of the night sky over inhabited areas
- Light trespass – light falling where it is not intended or needed
- Clutter – bright, confusing and excessive groupings of light sources

Q.22) Consider the following statements about 'Yangli Festival'

1. It is celebrated by the Tiwa tribe in Assam
2. It is celebrated for a bountiful harvest as well as protection of crops against pests and other harmful natural calamities

Select the correct statements

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

Q.22) Solution (c)

Yangli festival

- It is celebrated in Assam's Karbi Anglong by Tiwa tribes
- Tiwas pray for a bountiful harvest as well as protection for their crops against pests and other harmful natural calamities

- It is celebrated every 3 years

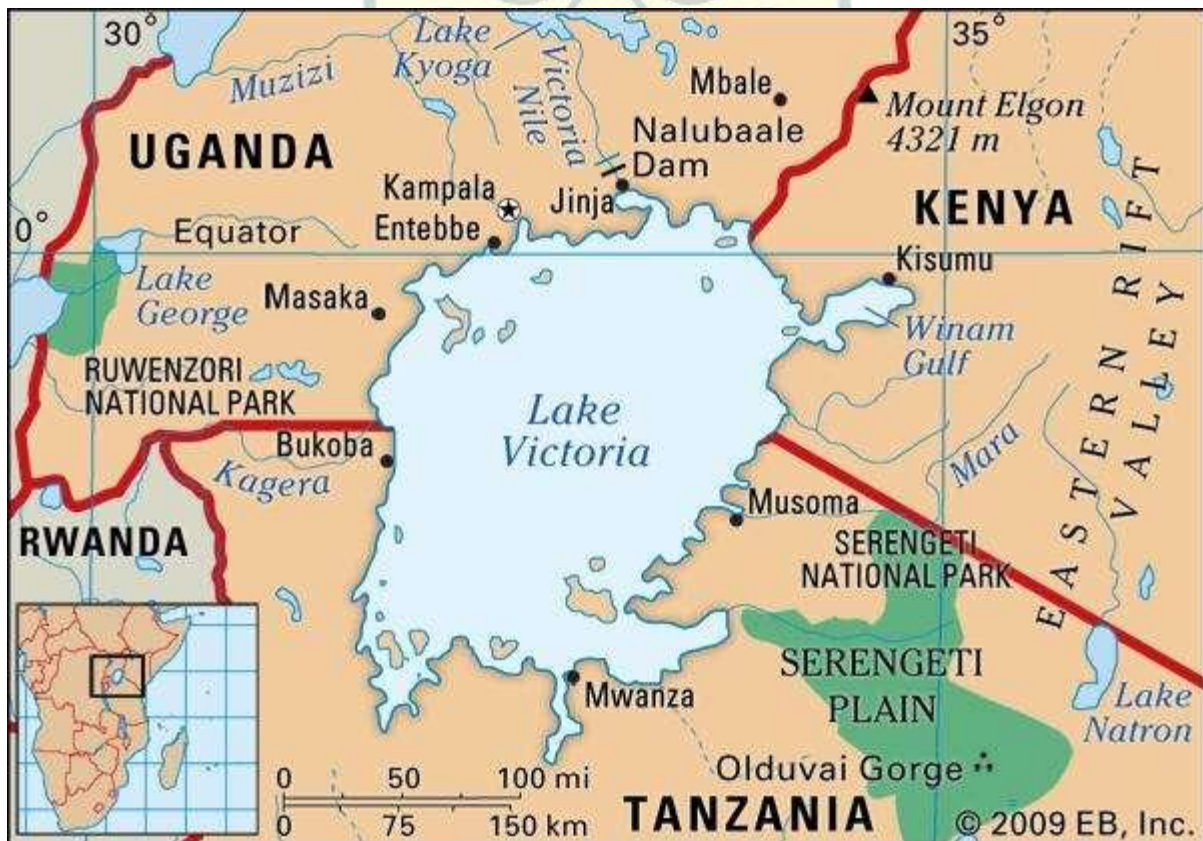
Q.23) 'Lake Victoria' is bordered by

1. Kenya
2. Tanzania
3. Rwanda
4. Uganda

Select the correct code:

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

Q.23) Solution (c)



Q.24) Consider the following statements about '1 Gigaton Coalition'

1. It was launched to enhance the uptake of renewable energy in India
2. It was launched by Ministry of Environment, Forest and Climate Change and is funded by the World Bank

Select the correct statements

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

Q.24) Solution (d)

The UN Environment Programme (UNEP), with support from the Government of Norway, launched a coalition to promote the expansion of renewable energy and energy efficiency in climate change mitigation efforts.

The '1 Gigaton Coalition' is so named because it is believed that emission reductions from renewable energy and energy efficiency efforts could deliver annual savings of 1 gigaton of carbon dioxide equivalent (CO₂e) per year by 2020.

Q.25) Consider the following statements about 'Blackbuck'

1. It is a moderately sized antelope
2. It is listed as critically endangered by IUCN
3. It inhabits grassy plains and thinly forested areas where perennial water sources are available for its daily need to drink

Select the correct statements

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

Q.25) Solution (c)

Blackbuck, also known as the Indian antelope, is an antelope found in India, Nepal and Pakistan. The blackbuck is the sole extant member of the genus Antelope.

Blackbuck is native to the Indian subcontinent, but extinct in Bangladesh. In Nepal, the last surviving population of blackbuck inhabits the Blackbuck Conservation Area south of the Bardia National Park.

Blackbuck inhabits grassy plains and thinly forested areas where perennial water sources are available for its daily need to drink. Herds travel long distances to obtain water. Scrublands are a good source of forage and cover. Cold climates do not suit the blackbuck.

Q.26) Gurudongmar Lake is located in

- a) Sikkim
- b) Arunachal Pradesh
- c) Jammu & Kashmir
- d) Uttarakhand

Q.26) Solution (a)

Gurudongmar Lake is one of the highest lakes in the world and in India, located at an altitude of 17,800 ft (5,430 m) in Sikkim. It is considered sacred by Buddhists, Sikhs and Hindus.

