

**Q.1) Chemputer are a type of computers where data are represented by**

- a) Spin of the molecules.
- b) Potential energy of the system
- c) Varying concentrations of chemicals.
- d) Orientation of the molecules.

**Q.1) Solution (c)**

A chemputer, chemical computer, is an unconventional computer based on a semi-solid chemical "soup" where **data are represented by varying concentrations of chemicals**. The computations are performed by naturally occurring chemical reactions.

A radical new method of producing drug molecules, which uses downloadable blueprints to easily and reliably synthesise organic chemicals via a programmable 'chemputer', could be set to democratise the pharmaceutical industry.

This approach is a key step in the digitization of chemistry and will allow the universal assembly of complex molecules on demand, democratizing the ability to discover and make new molecules using a simple software app and a modular chemputer.

**Q.2) Which of the following is/are disadvantage(s) of RO water purifier?**

1. Besides impurities, RO water purifier also removes essential natural mineral like sodium, iron, calcium, and magnesium.
2. It does not work well in case of hard water.
3. Home RO filters waste nearly 80% of the water during treatment.

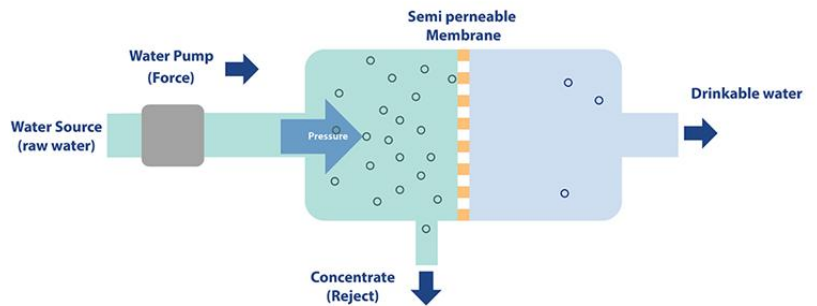
**Select the correct option –**

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

**Q.2) Solution (c)**

The Central government has drawn up plans to ban the use of membrane-based water purification systems (MWPS) – primarily reverse osmosis (RO) systems – in areas where the source of water meets the Bureau of Indian Standards' drinking water norms.

## HOW DO YOU LOWER THE TDS IN YOUR WATER? USING REVERSE OSMOSIS (RO) PURIFIERS!



- RO is a type of filtration that uses a semi-permeable, thin membrane with pores small enough to pass pure water through while rejecting larger molecules such as dissolved salts (ions) and other impurities (**bacteria, colloids, organics etc**). A membrane rejects contaminants based on their size and charge.
- *RO membranes do not remove gases like CO<sub>2</sub> or O<sub>2</sub> because these gases are not highly ionized (charged) while they're in solution and have a very low molecular weight. RO removes the concentration of TDS which is comprises of charged ions in the water.*
- In an RO system, pressure (usually from a pump) is used to overcome natural osmotic pressure, forcing impure water through the membrane that removes a high percentage of impurities.
- To avoid build-up of contaminants, cross-flow filtration allows water to sweep away contaminants.
- **Usage:** To produce highly purified drinking water, used in industrial boilers, food and beverage processing, cosmetics, pharmaceutical production, seawater desalination.

ADVANTAGES OF RO SYSTEM	DISADVANTAGES OF RO SYSTEM
<ul style="list-style-type: none"> <li>• Removes toxin like chlorine, Fluoride, <u>lead (cause of brain damage and anaemia)</u>, mercury, and Arsenic that makes our body unwell.</li> <li>• Cryptosporidium which is found in public supply water, lakes and rivers can be removed by RO filter.</li> <li>• Best solution for purifying hard water.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Demineralization:</b> Besides impurities, RO water purifier (when TDS level in water is less than 50) also removes essential natural mineral like sodium, iron, calcium, and magnesium that are essential for our body.</li> <li>• A very low concentration of TDS has been found to give water a flat taste, which is undesirable to many people.</li> <li>• <b>Wastage of water (environmental concern):</b> To avoid build-up of contaminants, cross-flow filtration allows water to sweep away contaminants.</li> </ul>

### Q.3) Consider the following –

1. Oxide of Hydrogen
2. Oxide of Nitrogen
3. Oxide of Sulphur

4. Oxide of Carbon

**Which of the above cause/causes acid rain?**

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

**Q.3) Solution (a)**

Acid rain is caused by a chemical reaction that begins when compounds like sulfur dioxide and nitrogen oxides are released into the air. These substances can rise very high into the atmosphere, where they mix and react with water, oxygen, and other chemicals to form more acidic pollutants, known as acid rain.

Oxide of water i-e  $H_2O$  or oxide of carbon i-e  $CO_2$  or  $CO$  are not the cause of acid rain.

**Q.4) Consider the following statements -**

- 1. One molecule of urea can release two nitrogenous molecules in the soil.
- 2. Excessive use of nitrogenous fertilizers in agriculture can cause proliferation of nitrogen-fixing microorganisms in soil.

**Select the correct option -**

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

**Q.4) Solution (a)**

Statement 1 is correct - The chemical formula of urea is  $CO(NH_2)_2$ . So urea has two nitrogen atoms. On hydrolysis urea will form two ammonia molecules.

Statement 2 is absurdly incorrect. If use of nitrogen based fertilizer would have increased proliferation of nitrogen-fixing microorganisms in soil, then there would be no further need of nitrogen-based fertilizer.

**Q.5) Photochemical smog is a resultant of the reaction among –**

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- NO<sub>2</sub>, O<sub>3</sub> and peroxyacetyl nitrate in the presence of sunlight
- CO, O<sub>2</sub> and peroxyacetyl nitrate in the presence of sunlight
- CO, CO<sub>2</sub> and NO<sub>2</sub> at low temperature
- High concentration of NO<sub>2</sub>, O<sub>3</sub> and CO in the evening

### Q.5) Solution (a)

Photochemical smog is a unique type of air pollution which is caused by reactions between sunlight and pollutants like hydrocarbons and nitrogen dioxide (NO and NO<sub>2</sub>). Other components of the photochemical smog include Ozone (O<sub>3</sub>) formaldehyde, peroxy benzoyl nitrate (PBzN), peroxy acetyl nitrate (PAN) and acrolein. The formation of photochemical smog can be expressed in the simple terms as: Hydrocarbons + NO<sub>x</sub> + sunlight

### Q.6) Consider the following examples regarding 'green crackers' –

- It has been developed by Indian Council of Scientific and Industrial Research (CSIR).
- It does not have poisonous chemicals and uses only the rapid chemical reaction with nitrogen and water as the chief final product.
- The reaction in green crackers is endothermic.

### Select the correct option -

- 1 only
- 1 and 2 only
- 1 and 3 only
- All of the above

### Q.6) Solution (a)

Indian Council of Scientific and Industrial Research (CSIR) has developed green crackers, which are new and improved formulations of the previous sound-emitting crackers and other fireworks.

They are known as 'green' firecrackers because **they have a chemical formulation that produces water molecules, which substantially reduces emission levels and absorbs dust.**

- It promises a reduction in particulate matters and harmful gases, like nitrous oxide and sulfur oxide, by 30- 35 per cent.
- The green crackers will be 25-30 per cent cheaper to manufacture and manufacturers would not have to make any changes in their facilities.

Reaction that produces heat and light are always **exothermic** – i.e absorbs heat. t

**Q.7) Consider the following statements regarding cloud seeding?**

1. Silver Iodide is commonly used for cloud seeding.
2. Free radicals are generated by the chemicals used and that helps in gathering more water vapour to form clouds.

**Select the correct option –**

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

**Q.7) Solution (a)**

The most common chemicals used for cloud seeding include silver iodide, potassium iodide and dry ice (solid carbon dioxide).

The chemicals used in cloud seeding provide only the surface for condensation of water vapour. There is no chemical reaction what so ever.

**Q.8) The definition of Kilogram (kg) has changed recently. How is the new definition fundamentally different from the old one?**

- a) The new definition will allow multiple standard mass of 1 kg and will be helpful in calibrations worldwide.
- b) The new definition is more precise and given upto ten decimal.
- c) The new definition has been arrived at by consensus.
- d) The new definition is related to a constant of nature.

**Q.8) Solution (d)**

The definition of the kilogram changed fundamentally; the previous definition defined the kilogram as the mass of the international prototype of the kilogram, which is an artefact rather than a constant of nature. The new definition relates the kilogram to, amongst things, the equivalent mass of the energy of a photon given its frequency, via the Planck constant.

**Previous definition:** The kilogram is the unit of mass; it is equal to the mass of the international prototype of the kilogram.

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**2019 definition:** The kilogram, symbol kg, is the SI unit of mass. It is defined by taking the fixed numerical value of the Planck constant  $h$  to be  $6.62607015 \times 10^{-34}$  when expressed in the unit J·s, which is equal to  $\text{kg} \cdot \text{m}^2 \cdot \text{s}^{-1}$ , where the metre and the second are defined in terms of  $c$  and  $\Delta\nu_{\text{Cs}}$ .

**Q.9) The final Agent Orange raid in Vietnam took place in 1970– areas have begun to bloom again. But 19 years after the war's end, it seems plain that Agent Orange is killing and maiming human beings, something it never intended to do. The apparent toxic fallout from those clouds–is a crop of human miseries including cancers, miscarriages and birth defects–that may persist for decades." The offensive substance referred to in this quotation is:**

- a) DDT used as insecticide
- b) A complex mixture of herbicides and weedicides used to increase agricultural output in the South Vietnam under the U.S. aid programme
- c) A complex mixture of DDT and other insecticides used at aerial sprays for protection against malaria and other tropical diseases
- d) Dioxin used as defoliants

### **Q.9) Solution (d)**

America used Dioxin which is defoliants to clear the forests of Vietnam, so that it could kill the Vietnamese guerilla hiding in the forest. But the Dioxin had many after effects like cancers, miscarriage, and birth defects in after years.

**Q.10) Why Barium in a suitable form is administered to patients before an X-ray examination of the stomach?**

- a) barium allows X-rays to pass through the stomach on account of its transparency to X-rays
- b) barium compound, like magnesium sulphate helps in cleaning the stomach before X-ray examination
- c) barium is a good absorber of X-rays and this helps the stomach to appear clearly in contrast with the other regions in the picture
- d) barium salts are white in colour and this helps the stomach to appear clearly in contrast with other regions in the picture

### **Q.10) Solution (c)**

Barium is given in adequate amount to patients before X-ray examination. The gut (gastrointestinal tract) does not show up very well on ordinary X-ray pictures. However, if you drink a white liquid that contains a

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chemical called barium sulphate, the outline of the upper parts of the gut (esophagus, stomach and small intestines) shows up clearly on X-ray pictures. This is because X-rays do not pass through barium.

**Q.11) Assertion (A): Large cold storage plants use ammonia as refrigerant. While domestic refrigerators use chlorofluorocarbons.**

**Reason (R): Ammonia can be liquified at ambient temperature and low pressure.**

**Select the correct option -**

- a) Both A and R are true and R is the correct explanation of A
- b) Both A and R are true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

**Q.11) Solution (c)**

Ammonia is used as a large scale refrigerant because it has highest refrigerating capacity per pound of any refrigerant and a number of other excellent thermal properties that make it popular for a number of refrigeration applications in spite of its being toxic, explosive and flammable within certain conditions. Ammonia is used as refrigerant prominently in the refrigeration systems of food industry like dairies, ice creams plants, frozen food production plants, cold storage warehouses, processors of fish, meat and number of other applications. Comparatively chlorofluorocarbon (CFC) chemical, safer refrigerators were possible for home and consumer use.

Ammonia can be liquified at ambient temperature and high pressure.

**Q.12) Coke is one of the materials of the charge added to the blast furnace for the production of Iron/steel. Its function is to –**

1. Act as the reducing agent
2. Remove silica associated with the iron ore
3. Function as fuel – to supply heat
4. Act as an oxidizing agent.

**Select the correct option –**

- a) 1 and 2 are correct
- b) 2 and 4 are correct
- c) 1 and 3 are correct

d) 3 and 4 are correct

### Q.12) Solution (c)

Coke is used as a fuel and a reducing agent in melting iron ore. It also functions as fuel.

### Q.13) Which of the following is incorrect?

- a) The presence of NaCl increases the rate of setting of plaster of Paris.
- b) Gypsum is added to the cement to slow down its rate of setting
- c) All alkaline earth metals form hydrated salts
- d) Barium and Strontium are found free in nature

### Q.13) Solution (d)

Strontium is a relatively abundant element in the Earth's crust. It ranks about 15th among the elements found in the Earth. That makes it about as abundant as fluorine and its alkaline earth partner, barium. The most common minerals containing strontium are Celestine and strontianite.

### Q.14) Consider the following pair –

Characteristics	Particle
A. Zero Mass	1. Boson
B. Fractional charge	2. Neutrino
C. Fractional spin	3. Quark
D. Integral Spin	4. Photon

### Choose the correctly matched pair form the above –

- a) A-4, B-2, C-3, D-1
- b) A-3, B-2, C-4, D-1
- c) A-2, B-3, C-4, D-1
- d) A-4, B-3, C-2, D-1

### Q.14) Solution (d)

- **Quarks have fractional charges** of one third or two thirds of the basic charge of the electron or proton.
- Particles having net spin  $1/2$  include the proton, neutron, electron, neutrino, and quarks.
- **Particles with integer spin are called bosons.**



**Q.15) Aspartame is an artificial sweetener sold in the market. It consists of amino acids and provides calories like other amino acids. Yet, it is used as a low-calorie sweetening agent in food items. What is the basis of this use?**

- a) Aspartame is as sweet as table sugar, but unlike table sugar, it is not readily oxidized in human body due to lack of requisite enzymes.
- b) When aspartame is used in food processing, the sweet taste remains, but it becomes resistant to oxidation.
- c) Aspartame is as sweet as sugar, but after ingestion into the body, it is converted into metabolites that yield no calories.
- d) Aspartame is several times sweeter than table sugar, hence food items made with small quantities of aspartame yield fewer calories on oxidation.

**Q.15) Solution (c)**

Aspartame is metabolized by the body into two constituent amino acids and methanol. These hydrolysis products are handled by the body in the same way as aspartic acid, L-Phenylalanine and methanol from other consumed foods. These components yield NO calorie and add nothing new to the diet.

**Q.16) 'Micelles formation' is associated with which of the following?**

- a) Sericulture
- b) Saponification
- c) Cloud seeding
- d) None of the above

**Q.16) Solution (d)**

Micelles are lipid molecules that arrange themselves in a spherical form in aqueous solutions. The formation of a micelle is a response to the amphipathic nature of fatty acids, meaning that they contain both hydrophilic regions (polar head groups) as well as hydrophobic regions (the long hydrophobic chain).

Micelles contain polar head groups that usually form the outside as the surface of micelles. They face to the water because they are polar. The hydrophobic tails are inside and away from the water since they are nonpolar. Fatty acids from micelles usually have a single hydrocarbon chain as opposed to two hydrocarbon tails.

## Cleansing Action of Soaps and Detergents

Most of the dirt is oily in nature and oil does not dissolve in water. The molecule of soap constitutes sodium or potassium salts of long-chain carboxylic acids. In the case of soaps, the carbon chain dissolves in oil and the ionic end dissolves in water. Thus the soap molecules form structures called micelles.

**Note** - *Saponification* is a process that involves conversion of fat or oil or lipid into soap and alcohol by the action of heat in the presence of aqueous alkali (e.g. NaOH). It is basically a chemical reaction. There is no micelle formation here.

**Q.17) Excessive release of the pollutant carbon monoxide (CO) into the air may produce a condition in which oxygen supply in the human body decreases. What causes this condition?**

- When inhaled into the human body, CO is converted into CO<sub>2</sub>
- The inhaled CO has much higher affinity for haemoglobin as compared to oxygen
- The inhaled CO destroys the chemical structure of haemoglobin
- The inhaled CO adversely affects the respiratory centre in the brain

**Q.17) Solution (b)**

Haemoglobin have a higher affinity for carbon monoxide in comparison to oxygen

**Q.18) Chlorofluorocarbons, known as ozone depleting substances, are used**

- in the production of plastic foams
- in the production of tubeless tyres
- in cleaning certain electronic components
- as pressurizing agents in aerosol cans

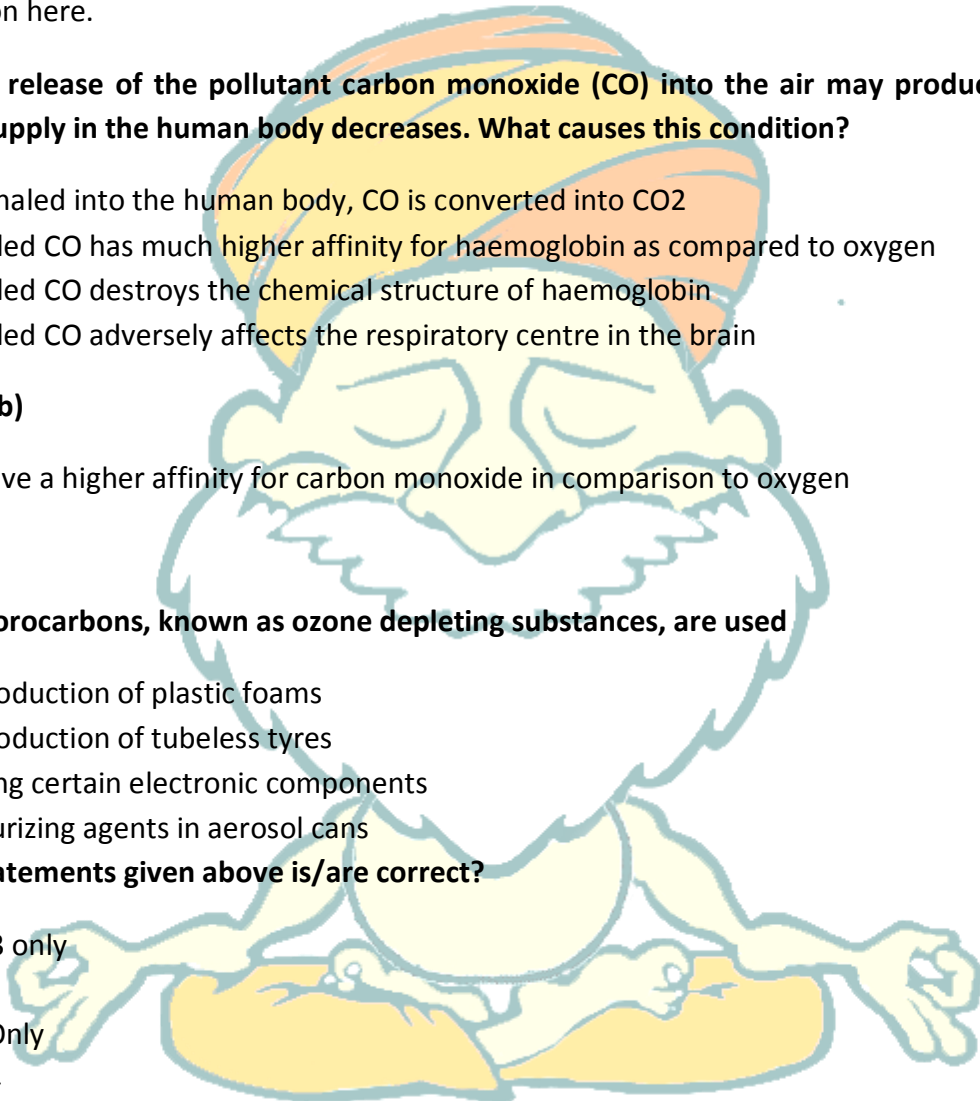
**Which of the statements given above is/are correct?**

- 1,2 and 3 only
- 4 Only
- 1,3 & 4 Only
- 1,2,3 & 4

**Q.18) Solution (c)**

Application of Chlorofluorocarbons

- refrigerant gases in air conditioners, freezers and refrigerators.
- plastic insulants



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- solvents for cleaning computer parts, printed circuit boards
- 'dry cleaning' agents for clothes.
- fluid in certain fire extinguishers.
- typing correction fluid
- aerosol sprays, blowing agents for foams and packing materials

**Q.19) Consider the following statements –**

1. Methane in atmosphere oxidizes to carbon dioxide after a decade or two.
2. CFCs have a lifetime in the atmosphere of about 20 to 100 years

**Select the correct option –**

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

**Q.19) Solution (c)**

CFCs have a lifetime in the atmosphere of about 20 to 100 years, and consequently one free chlorine atom from a CFC molecule can do a lot of damage, destroying ozone molecules for a long time.

Methane is relatively short-lived in the atmosphere; a molecule of methane is oxidized to water and carbon dioxide within a decade or so, mainly by reaction with another trace gas, the hydroxyl radical OH<sup>-</sup>. Thus, unlike the case of carbon dioxide (which stays in the atmosphere longer than methane), a concerted effort to reduce methane emissions would have almost immediate results in terms of reduction of greenhouse effect.

**Q.20) Which of the following is/are implication(s) of discovery of cryo-electron microscopy?**

1. It will enable structure determination of biomolecules in water-based samples.
2. It will enable scientists to see how biomolecules move and interact as they perform their functions

**Select the correct option –**

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

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Q.20) Solution (c)

The Nobel Prize in Chemistry 2017 was awarded to Jacques Dubochet, Joachim Frank and Richard Henderson for the development of cryo-electron microscopy, which both simplifies and improves the imaging of biomolecules.

Transmission electron microscopes (TEMs) use a beam of electrons to examine the structures of molecules and materials at the atomic scale. As the beam passes through a very thin sample, it interacts with the molecules, which projects an image of the sample onto the detector (often a charge-couple device; CCD). Because the wavelength of electrons is much shorter than that of light, it can reveal much finer detail than even super-resolution light microscopy.

But some materials – particularly biomolecules – are not compatible with the high-vacuum conditions and intense electron beams used in traditional TEMs. The water that surrounds the molecules evaporates, and the high energy electrons burn and destroy the molecules

Cryo-EM uses frozen samples, gentler electron beams and sophisticated image processing to overcome these problems.

X-ray diffraction can give very high resolution structures of biomolecules, and several Nobel prizes have been awarded for just that. **But to get an x-ray structure, we need to be able to crystallize the molecule.**

**Cryo-EM doesn't require crystals, and it also enables scientists to see how biomolecules move and interact as they perform their functions, which is much more difficult using crystallography.**

Cryo-EM techniques used water-based TEM samples so rapidly that the water forms a disordered glass, rather than crystalline ice. This is important because ordered ice crystals would strongly diffract the microscope's electron beam, obscuring any information about the molecules being studied.

**Q.21) Consider the following statements:**

1. The Artificial Intelligence based ASKDISHA chatbot is developed to register complaints of women which are harassment related.
2. The ASKDISHA Chatbot can converse even in Hindi language.

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

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

### Q.21) Solution (b)

- **Artificial Intelligence based ASKDISHA chatbot is developed to resolve queries of railway passengers over the internet pertaining to various services offered by IRCTC**
- In order to resolve queries of railway passengers over the internet pertaining to various services offered, Indian Railways had introduced the services of Artificial Intelligence based ASKDISHA chatbot in October 2018 for the benefit of the users, Indian Railways Catering & Tourism Corporation Limited (IRCTC).
- The ASKDISHA Chatbot was initially launched in English language. IRCTC has now powered **voice enabled ASKDISHA to converse with customers in Hindi language also**. The customers can now ask queries to ASKDISHA in Hindi language by voice as well as text.
- IRCTC plans to launch ASKDISHA in more languages along with many other additional features in the near future.
- The chatbot is a special computer programme designed to simulate conversation with users, especially over the internet.

### Q.22) With reference to One Health, Consider the following statements:

1. The concept of One Health recognizes that health of human beings is connected to health of animals and environment.
2. The concept of One Health can be effectively implemented for reducing incidence of emerging zoonotic threats.

### Which of the statements given above is/are Correct?

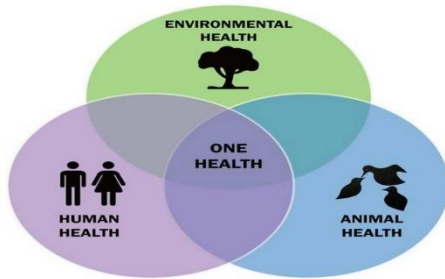
- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

### Q.22) Solution (c)

- The concept of 'One Health', which **recognises that health of human beings is connected to health of animals and environment**, is gaining importance as most of the contagious diseases affecting humans are zoonotic (animal to man origin) in nature.

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- “The concept of One Health can be effectively implemented for reducing incidence of emerging zoonotic threats like COVID-19.
- Of the contagious diseases affecting humans, more than 65% are of zoonotic or animal to man origin.
- The Kerala Veterinary and Animal Sciences University (KVASU) has launched One Health centre to address the emerging zoonotic threats like avian influenza, swine flu, monkey fever, coronavirus infection, etc.
- Increasing stress on animals due to loss of their habitat would increase scope of zoonotic diseases.



**Q.23) Which of the following statements is/are Correct regarding Atal Bhujal Yojana (ABHY)?**

1. It is a central sector scheme.
2. It is being implemented by the Ministry of Jal Shakti.
3. Half of the cost of the scheme will be borne by the Government, while the other half will be funded by UN Water.

**Select the correct answer using the code given below:**

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

**Q.23) Solution (d)**

- The Atal Bhujal Yojana (ABHY) is a **central sector scheme** worth Rs.6,000 crore for sustainable management of groundwater with community participation.
- It envisages people's participation through the formation of 'Water User Associations', water budgeting, preparation & implementation of Gram-panchayat-wise water security plans, etc.

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- It is being implemented by the **Ministry of Jal Shakti** (earlier known as Ministry of Water Resources, River Development and Ganga Rejuvenation).
- The objective of the programme was to lay emphasis on the recharge of groundwater resources and improve the exploitation of the groundwater resources, with the involvement of people at the local level.
- Half of the cost of the scheme will be borne by the Government, while the other half will be **funded by the World Bank** in the form of a loan.

**Q.24) Which of the following statements is/are correct regarding Narcotics Control Bureau (NCB)?**

1. It enforces the prohibition of the smuggling of items including drugs, gold, diamonds, electronics, foreign currency, and counterfeit Indian currency.
2. The NCB's national headquarters is located in Mumbai.
3. It comes under Ministry of Ministry of Home Affairs.

**Select the correct answer using the code given below:**

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

**Q.24) Solution (c)**

**Directorate of Revenue Intelligence (DRI)** is the major intelligence agency which enforces the prohibition of the smuggling of items including drugs, gold, diamonds, electronics, foreign currency, and counterfeit Indian currency.

**Narcotics Control Bureau**

- It was constituted by the Government of India in 1986 under the Narcotic Drugs and Psychotropic Substances Act, 1985.
- The act provides for the penalty of property derived from or used in illegal traffic in narcotic drugs.
- It is the apex drug law enforcement and intelligence agency responsible for fighting drug trafficking and the abuse of illegal substances in India.

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- The Narcotics Control Bureau's national headquarters is located in Delhi and it is affiliated to Ministry of Home Affairs.

### Functions:

- Coordination among various Central and State Agencies engaged in drug law enforcement;
- Assisting States in enhancing their drug law enforcement effort;
- Collection and dissemination of intelligence;
- Analysis of seizure data, study of trends and modus operandi;
- Preparation of National Drug Enforcement Statistics;
- Liaison with International agencies such as UNDCP, INCB, INTERPOL, Customs Cooperation Council, RILO etc;
- National contact point for intelligence and investigations

### Q.25) The term “Operation Vanilla” is sometimes seen in the news with reference to:

- a) It aims to unify the islands of Comoros, Mauritius, Madagascar, La Reunion, Seychelles Maldives and Mayotte, under one tourism brand through the affiliation of each of the islands.
- b) It is the operation launched by Indian Navy to assist the population of Madagascar affected by Cyclone Diane.
- c) It is the operation against fighting the vanilla thieves of Madagascar launched by government of Madagascar.
- d) It is an operation of Indian Air Force to bring back the Indians stuck in China due to Covid 19

### Q.25) Solution (b)

- Recently, the Indian Navy has launched the 'Operation Vanilla' to assist the population of Madagascar affected by Cyclone Diane.
- Indian Navy also diverted large amphibious ship viz. INS Airavat carrying clothing, medicines, and other relief material to provide assistance and support in the relief operations.

### Cyclone Diane

- It is a tropical cyclone.
- Origin: North-west off the coast of Mauritius in the South-western Indian Ocean.



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- Madagascar has been hit by it and there has been heavy flooding and landslips causing loss of lives and displacement, affecting more than 92,000 people. India has been the first country to respond to floods in Madagascar.



**Q.26) Consider the following statements with respect to ‘Gandhinagar Declaration’.**

1. The Declaration urges Parties and other governments to ensure effective liaison between the national focal points of the Convention on Migratory Species and those of the Convention on Biodiversity and other biodiversity-related conventions and agreements, as well as the Paris Agreement under the United Nations Framework Convention on Climate Change.
2. The Declaration recognizes the importance of synergies and cooperation among biodiversity-related conventions and other multilateral environmental agreements, and that their role should be clearly reflected in the post-2020 global biodiversity framework.

**Select the correct statements**

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

**Q.26) Solution (c)**

The Gandhinagar Declaration emphasizes that improvement of ecological connectivity is the top priority for the Convention on Migratory Species in the post-2020 global biodiversity framework and that the role of the Convention body should be clearly reflected in the post-2020 framework.

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The Declaration also recognizes the importance of synergies and cooperation among biodiversity-related conventions and other multilateral environmental agreements, and that their role should be clearly reflected in the post-2020 global biodiversity framework.

The Declaration urges Parties and other governments to ensure effective liaison between the national focal points of the Convention on Migratory Species and those of the Convention on Biodiversity and other biodiversity-related conventions and agreements, as well as the Paris Agreement under the United Nations Framework Convention on Climate Change. This is with a view to reflect the respective priorities of, and align their efforts under the various agreements related to the post-2020 global biodiversity framework and national biodiversity strategies and action plans.

Another key outcome of the meeting was the addition of 10 new species to the Convention on Migratory Species Appendices, including Asian elephants, jaguars, and great Indian bustards, Bengal floricans, little bustards, antipodean albatrosses and oceanic white-tip sharks, all slated to receive the strictest protection under Appendix I.

**Q.27) According to FAO, which of the following areas are identified as hotspots of threatening locust activity?**

1. Horn of Africa
2. Red Sea Area
3. Southwest Asia
4. Pearl River Delta

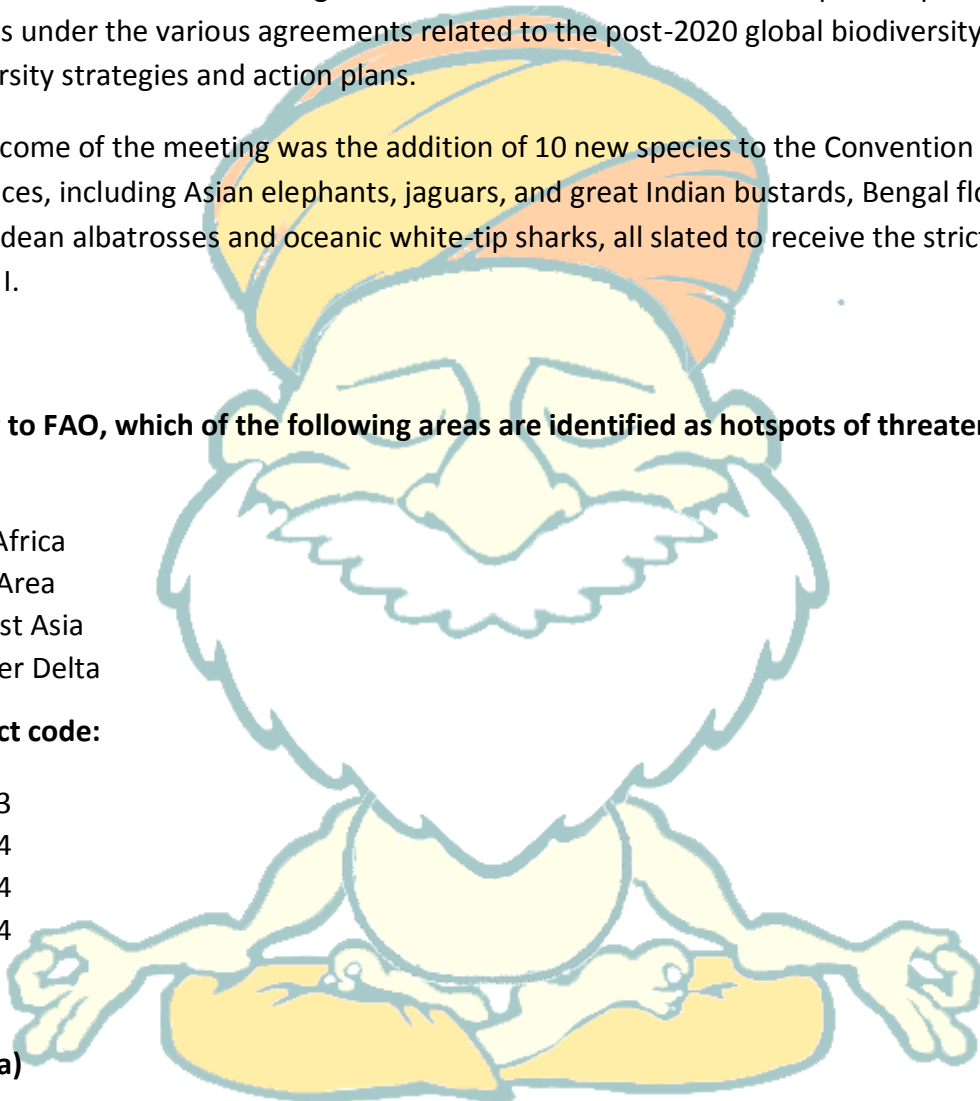
**Select the correct code:**

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

**Q.27) Solution (a)**

The Food and Agriculture Organisation (FAO) of the United Nations has currently identified three hotspots of threatening locust activity, where the situation has been called “extremely alarming” — the Horn of Africa, the Red Sea area, and southwest Asia.

The Horn of Africa has been called the worst-affected area, where the FAO has said there is “an unprecedented threat to food security and livelihoods”.



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Four species of locusts are found in India:

- Desert locust (*Schistocerca gregaria*),
- Migratory locust (*Locusta migratoria*),
- Bombay Locust (*Nomadacris succincta*) and
- Tree locust (*Anacridium sp.*).

**Q.28) Which of the following statements is/are correct?**

1. Hundred percent income tax exemption is given from profit derived from activities such as post-harvest value addition to agriculture by Farmer Producers' Organisations (FPO)'s having annual turnover up to Rs 100 crores.
2. Hundred percent FDI is permitted under the approval route in Food Processing Industries and forty nine percent FDI is allowed through automatic route for trading including e-commerce in respect of food products manufacture and produced in India.

**Select the correct statements**

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

**Q.28) Solution (a)**

Hundred percent FDI is permitted under the automatic route in Food Processing Industries and 100 percent FDI is allowed through approval route for trading including e-commerce in respect of food products manufacture and produced in India. Further, 100 percent income tax exemption is given from profit derived from activities such as post-harvest value addition to agriculture by FPO's having annual turnover up to Rs 100 crores.

**Q.29) 'India Economic Strategy to 2035 (IES 2035)' is associated with which of the following countries?**

- a) USA
- b) Australia
- c) Japan
- d) France

### Q.29) Solution (b)

The India Economic Strategy is an ambitious plan to transform Australia's economic partnership with India out to 2035.

### Q.30) 'National Tiger Conservation Authority (NTCA)' is set up under

- a) Wildlife Protection Act, 1972
- b) Environment (Protection) Act, 1986
- c) Biological Diversity Act, 2002
- d) None of the above

### Q.30) Solution (a)

The National Tiger Conservation Authority is a statutory body under the Ministry of Environment, Forests and Climate Change constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it under the said Act.

The National Tiger Conservation Authority (NTCA) was established in December 2005 following a recommendation of the Tiger Task Force, constituted by the Prime Minister of India for reorganised management of Project Tiger and the many Tiger Reserves in India.

