Q.1) Which of the following processes contributes maximum to the power generation in India?

a) Hydel power
b) Thermal power
c) Nuclear power
d) Solar and wind power

Q.1) Solution (b)

The all India installed power generation capacity by November 2015 is 2,82,023.78 MW comprising 1,96,204.44 MW thermal 42,623.42 MW hydro, 5.780 MW nuclear and 37,415.53 MW R.E.S.

Q.2) The government of India had launched a very ambitious initiative of Ultra Mega Power Projects. Which of the following statements are correct about UMPPs?

1. They are large hydel power projects to tap the full potential of unused streams.
2. Each UMPP will have the capacity of generating 10,000 MW of power.
3. Till now 10 UMPPs have already been sanctioned by the Government of India.

Select the code from below:

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

Q.2) Solution (d)

The Government of India had launched an initiative for the development of coal-based Ultra Mega Power Projects (UMPPs), each with a capacity of 4,000 MW. The objective of the initiative is to ensure cheaper tariffs utilizing economies of scale, catering to the need of a number of states and to mitigate the risk relating to tie up of land fuel, water and other statutory clearances, etc. The projects are being awarded to the successful developers on the basis of
tariff based competitive bidding route employing super critical technology; to tie-up for necessary inputs and clearances such as provision of site, fuel through captive mining blocks, water and in-principle environment and forest clearances, project-specific shell companies (SPVs) are set up as wholly owned subsidiaries of the Power Finance Corporation Ltd. (PFC) - the nodal agency for these projects. These SPVs, along with the various clearances, etc. are subsequently transferred to the successful developer. Four UMPPs namely Sasan in Madhya Pradesh, Mundra in Gujarat, Krishnapatnam in Andhra Pradesh

and Tilaiya in Jharkhand have already been awarded to successful bidders and are at different stages of development.

Q.3) Which of the following statements are correct about National Domestic Efficient Lighting Program?

a) It urged people to use CFLs in place of tube lights and filament bulbs.
b) It urged people to use only 5 star efficiency rating appliances.
c) It promoted rural electrification.
d) None of the above

Q.3) Solution (d)

Domestic Efficient Lighting Programme (DELP) was launched in January 2015 urging the people to use LED bulbs in place of incandescent bulbs, tube lights and CFL bulbs as they are more efficient, long lasting and economical in their life cycle duration.

Q.4) The rate of biomass production in an ecosystem is called productivity. Which of the following statements are correct about it?

1. Net primary productivity (NPP) is less than Gross primary productivity (GPP).
2. Net Primary Productivity (NPP) is the available biomass for the consumption of heterotrophs.

Select the code from following:

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

Q.4) Solution (c)

Primary production is defined as the amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis. It is expressed in terms of weight (g –2) or energy (kcal m–2). The rate of biomass production is called **productivity**.
It is expressed in terms of g–2 yr –1 or (kcal m–2) yr–1 to compare the productivity of different ecosystems. It can be divided into gross primary productivity (GPP) and net primary productivity (NPP). **Gross primary productivity** of an ecosystem is the rate of production of organic matter during photosynthesis. A considerable amount of GPP is utilised by plants
in respiration. Gross primary productivity minus respiration losses (R), is the **net primary productivity** (NPP).

GPP – R = NPP

Net primary productivity is the available biomass for the consumption to heterotrophs (herbiviores and decomposers). **Secondary productivity** is defined as the rate of formation of new organic matter by consumers.

Q.5) Which of the following statements correctly explains the process of catabolism?

a) Seeping of water soluble organic material into lower soil horizons.
b) Breaking up for detritus material into smaller fragments.
c) Breaking up of larger organic molecules into smaller inorganic molecules.
d) Use of inorganic molecules by plants to form larger organic molecules.

Q.5) Solution (c)

The important steps in the process of decomposition are fragmentation, leaching, catabolism, humification and mineralisation.

Detritivores (e.g., earthworm) break down detritus into smaller particles. This process is called **fragmentation.** By the process of **leaching,** watersoluble inorganic nutrients go down into the soil horizon and get precipitated as unavailable salts. Bacterial and fungal enzymes degrade detritus into simpler inorganic substances. This process is called as **catabolism**.

Q.6) Which of the following factors play an important role in determining the rate of decomposition of detritus material?

1. Chemical composition of Detritus
2. Temperature
3. Soil moisture

Select the code from below:

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

Q.6) Solution (d)

The rate of decomposition is controlled by chemical composition of detritus and climatic factors. In a particular climatic condition, decomposition rate is slower if detritus is rich in lignin and chitin, and quicker, if detritus is rich in nitrogen and water-soluble substances like sugars. Temperature and soil moisture are the most important climatic factors that regulate

decomposition through their effects on the activities of soil microbes. Warm and moist environment favour decomposition whereas low temperature and anaerobiosis inhibit decomposition resulting in build up of organic materials.

Q.7) Deep sea – Hydrothermal vents were recently discovered by the scientist. Which of the following statements are correct about Hydrothermal ecosystems?

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

Select the code from below:

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

Q.7) Solution (a)

Deep-sea hydrothermal vents form as a result of volcanic activity on the ocean floor. Water seeps through cracks in the Earth's crust, dissolving metals and minerals as it becomes super-heated from nearby magma.
This water - which can reach temperatures of 400°C - eventually rises back through the ocean floor, erupting as a geyser from a hydrothermal vent. The dissolved minerals and metals precipitate on contact with the cold sea water, forming a chimney around the vent.
When scientists first discovered these vents in the 1970s, they were amazed to find thriving communities of shrimp, crabs, giant tubeworms, clams, slugs, anemones, and fish. These rare geological features turned out to be oases on the otherwise sparsely inhabited ocean floor, with a biomass equivalent to that of a rainforest.

Instead of sunlight, vent life relies on hydrogen sulfide - more commonly known as rotten egg gas and toxic to most land-based life.
In a process called chemosynthesis, specialized bacteria create energy from the hydrogen sulfide present in the mineral-rich water pouring out of the vents. These bacteria form the bottom level of the food chain in these ecosystems, upon which all other vent animals are dependent.

Q.8) Based on the source of their food, organisms occupy a special place in the food chain. This position is called:

a) Niche
b) Trophic level
c) Horizon
d) Food web

Q.8) Solution (b)

Organisms occupy a place in the natural surroundings or in a community according to their feeding relationship with other organisms.
Based on the source of their nutrition or food, organisms occupy a specific place in the food chain that is known as their **trophic level**. Producers belong to the first trophic level, herbivores (primary consumer) to the second and carnivores (secondary consumer) to the third.

Q.9) Consider the following statements:

1. Pyramid of number is always upright because the number of primary producers is always larger than the number of organisms dependent upon them.
2. Pyramid of energy is always upright because at each tropic level some of the energy is lost as heat.

Which of the above statements are **incorrect**?

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

Q.9) Solution (a)

In most ecosystems, all the pyramids, of number, of energy and biomass are upright, i.e., producers are more in number and biomass than the herbivores, and herbivores are more in number and biomass than the carnivores. Also energy at a lower trophic level is always more than at a higher level.

But there are exceptions to this trend. In forests, the number of tress is less than the number of organisms dependent on each tree(insects, birds etc.)
Even in pyramid of biomass, there are exceptions like sea ecosystem. Very large organisms are dependent on phytoplanktons.
Pyramid of energy is always upright, can never be inverted, because when energy flows from a particular trophic level to the next trophic level, some energy is always lost as heat at

each step. Each bar in the energy pyramid indicates the amount of energy present at each trophic level in a given time or annually per unit area.

Q.10) Which of the following statements are correct about the process of secondary succession?

1. Secondary succession is much slower than the primary succession.
2. Secondary succession begins in areas where natural vegetation has been destroyed.

Select the code from below:

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

Q.10) Solution (b)

Ecological succession, the process by which the structure of a biological community evolves over time. Two different types of succession—primary and secondary—have been distinguished. Primary succession occurs in essentially lifeless areas—regions in which the soil is incapable of sustaining life as a result of such factors as lava flows, newly formed sand dunes, or rocks left from a retreating glacier. Secondary succession occurs in areas where a community that previously existed has been removed; it is typified by smaller-scale disturbances that do not eliminate all life and nutrients from the environment.

Secondary succession begins in areas where natural biotic communities have been destroyed such as in abandoned farm lands, burned or cut forests, lands that have been flooded. **Since some soil or sediment is present, succession is faster than primary succession.**

Description of ecological succession usually focuses on changes in vegetation. However, these vegetational changes in turn affect food and shelter for various types of animals. Thus, as succession proceeds, the numbers and types of animals and decomposers also change.

At any time during primary or secondary succession, natural or human induced disturbances (fire, deforestation, etc.), can convert a particular seral stage of succession to an earlier stage. Also such disturbances create new conditions that encourage some species and discourage or eliminate other species.

Q.11) Phosphorus is an important element used in metabolism and as a building up material in organisms. Which of the statements are correct for phosphorus cycle?

1. Rocks are the major reservoir of phosphorus which contains phosphorus in the form of phosphates.
2. Animals obtain phosphorus indirectly through plants.
3. There is no respiratory release of phosphorus in atmosphere.

Select the code from following:

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

Q.11) Solution (d)

Phosphorus is a major constituent of biological membranes, nucleic acids and cellular energy transfer systems. Many animals also need large quantities of this element to make shells, bones and teeth. The natural reservoir of phosphorus is rock, which contains phosphorus in the form
of phosphates. When rocks are weathered, minute amounts of these phosphates dissolve in soil solution and are absorbed by the roots of the plants. Herbivores and other animals obtain this element from plants. The waste products and the dead organisms are decomposed by phosphate-solubilising bacteria releasing phosphorus. Unlike carbon cycle, there is no respiratory release of phosphorus into atmosphere.

Q.12) The benefits that people obtain from ecosystems are termed as ecosystem services. Which of the following are the types of Ecosystem services?

1. Provisioning services
2. Regulating services
3. Habitat services
4. Cultural services

Select the code from below:

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

Q.12) Solution (d)

Ecosystem services are the direct and indirect contributions of ecosystems to human well-being.

Ecosystem services can be categorized in four main types:

Provisioning services are the products obtained from ecosystems such as food, fresh water, wood, fiber, genetic resources and medicines.

Regulating services are defined as the benefits obtained from the regulation of ecosystem processes such as climate regulation, natural hazard regulation, water purification and waste management, pollination or pest control.

Habitat services highlight the importance of ecosystems to provide habitat for migratory species and to maintain the viability of gene-pools.

Cultural services include non-material benefits that people obtain from ecosystems such as spiritual enrichment, intellectual development, recreation and aesthetic values.

Q.13) Lichens are one of the most important pioneer species. Which of the following statements are correct about Lichens?

1. Lichens are not single organisms, but they are formed by symbiotic relationship between algae and Fungi.
2. Lichens are found only in high alpine areas where moisture is scarce.

Select the code from following:

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

Q.13) Solution (a)

A lichen is not a single organism. Rather, it is a symbiosis between different organisms - a fungus and an alga or cyanobacterium.

The non-fungal partner contains chlorophyll and is called the **photobiont**. The fungal partner may be referred to as the **mycobiont**. While most lichen partnerships consist of one mycobiont and one photobiont, that's not universal for there are lichens with more than one photobiont partner. When looked at microscopically, the fungal partner is seen to be composed of filamentous cells and each such filament is called a **hypha**. These hyphae grow by extension and may branch but keep a constant diameter. Amongst the photobionts there are those that are also filamentous in structure while others are composed of chains or clusters of more-or-less globose cells.

Given that they contain chlorophyll, algae and cyanobacteria can manufacture carbohydrates with the help of light via the process of photosynthesis. By contrast, fungi do not make their own carbohydrates. Every fungus needs existing organic matter from which to obtain carbon. In a lichen some of the carbohydrate produced by the photobiont is of course used by the photobiont but some is 'harvested' by the mycobiont.

Lichens occur from sea level to high alpine elevations, in many environmental conditions, and can grow on almost any surface. Lichens are abundant growing on bark, leaves, mosses, on other lichens, and hanging from branches "living on thin air" (epiphytes) in rain forests and in temperate woodland. They grow on rock, walls, gravestones, roofs, exposed soil surfaces, and in the soil as part of a biological soil crust. Different kinds of lichens have adapted to survive in some of the most extreme environments on Earth: arctic tundra, hot dry deserts, rocky coasts, and toxic slag heaps. They can even live inside solid rock, growing between the grains.

Q.14) Bhopal gas tragedy has been one of the most deadliest industrial hazards in the history of India. Which of the following gas was released causing the disaster?

a) Potassium cyanide
b) Potassium isocyanate
c) Methyl isocyanate
d) Phosgene

Q.14) Solution (c)

The **Bhopal disaster** or **Bhopal gas tragedy** was an industrial accident. It happened at a Union Carbide subsidiary pesticide plant in the city of Bhopal, India. On 3 December 1984, the plant released 42 tonne of toxic methyl isocyanate (MIC) gas, exposing more than 500,000 people to toxic gases.

A mixture of poisonous gases flooded the city, causing great panic as people woke up with a burning sensation in their lungs. Thousands died immediately from the effects of the gas. Many were trampled in the panic that followed. The first official immediate death toll was 2,259. Another estimate is that 8,000 died within two weeks, that an additional 8,000 have since died from gas-related diseases.

Q.15) If a large amount of organic waste is dumped in a lake, it BOD will

a) Decrease
b) Increase
c) Remains unchanged

d) Can increase or decrease

Q.15) Solution (b)

Biochemical oxygen demand (**BOD**, also called **biological oxygen demand**) is the amount of dissolved oxygen needed (i.e., demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period. The BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a surrogate of the degree of organic pollution of water.
With increase in organic waste the requirement of oxygen by the microbes to decompose it will also increase.

Q.16) India's strategic crude oil storages are locate at which of the following

1. Visakhapatnam
2. Mangalore
3. Padur

Select the correct code:

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

Q.16) Solution (d)

Strategic petroleum reserves have become indispensable to safeguard the economy and to help maintain national security in the event of an energy crisis. These crude oil inventories (or stockpiles) can be held by the government of a particular country, as well as by private industry.

Strategic crude oil storages at three locations namely, Visakhapatnam, Mangalore and Padur (near Udupi)

Source: http://economictimes.indiatimes.com/news/politics-and-nation/india-uae-strategic-oil-reserves-deal-10-things-to-know/articleshow/56796338.cms

Q.17) Consider the following statements about 'Bunkar Mitra'

1. It is under the Ministry of Skill Development
2. It is a skill training programme for weavers

Select the correct code:

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

Q.17) Solution (d)

Ministry of Textilles.

"Bunkar Mitra", the Government of India's Helpline for Handloom Weavers.

The helpline provides a single point of contact to handloom weavers across the country for addressing queries and providing guidance.

The following services are available through this helpline:

Assistance on technical issues.

Guidance for:

- Raw material supply.
- Availing credit facility.
- Quality control.
- Access to marketing linkages.
- Information about various schemes and procedure to avail benefits.

Source: http://pib.nic.in/newsite/PrintRelease.aspx?relid=156130

Q.18) National Disaster Management Authority (NDMA) is chaired by

a) Minister of Home Affairs
b) Prime Minister of India
c) A secretary level IAS Officer appointed by the PMO
d) None of the above

Q.18) Solution (b)

National Disaster Management Authority (NDMA) is an agency of the Ministry of Home Affairs whose primary purpose is to coordinate response to natural or man-made disasters and for capacity-building in disaster resiliency and crisis response.

NDMA was established through the Disaster Management Act enacted by the Government of India in December 2005. The Prime Minister is the ex-officio chairperson of NDMA. The agency is responsible for framing policies, laying down guidelines and best-practices and coordinating with the State Disaster Management Authorities (SDMAs) to ensure a holistic and distributed approach to disaster management.

National Disaster Management Authority (NDMA), headed by the Prime Minister, and State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers.

NDMA is operationally organized into the following divisions:

- Policy & Planning
- Mitigation
- Operations & Communications
- Administration
- Capacity Building

Q.19) Other than Venezuela, which one among the following from South America is a member of OPEC?

a) Argentina
b) Brazil
c) Ecuador
d) Bolivia

Q.19) Solution (c)

The Organization of the Petroleum Exporting Countries (OPEC) was founded in Baghdad, Iraq, with the signing of an agreement in September 1960 by five countries namely Islamic Republic of Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. They were to become the Founder Members of the Organization.

These countries were later joined by Qatar (1961), Indonesia (1962), Libya (1962), the United Arab Emirates (1967), Algeria (1969), Nigeria (1971), Ecuador (1973), Gabon (1975) and Angola (2007).

Ecuador suspended its membership in December 1992, but rejoined OPEC in October 2007. Indonesia suspended its membership in January 2009, reactivated it again in January 2016, but decided to suspend its membership once more at the 171st Meeting of the OPEC Conference on 30 November 2016. Gabon terminated its membership in January 1995. However, it rejoined the Organization in July 2016.

This means that, currently, the Organization has a total of 13 Member Countries.

Q.20) Mahamastakabhisheka, a great religious event, is associated with and done for whom of the following?

a) Bahubali
b) Buddha
c) Mahavir
d) Nataraja

Q.20) Solution (a)

The Mahamastabhisheka (or Mahamasthak Abhishek) is an important Jain festival held once every twelve years in the town of Shravanabelagola in Karnataka state, India. The festival is held in veneration of an immense 18 meter high statue of the Bhagwan (or Saint) Gomateshwara Bahubali. The anointing last took place in February 2006, and the next ceremony will occur in 2018.

Source: http://www.thehindu.com/news/national/karnataka/Dates-for-Mahamastabhisheka-at-Shravanabelagola-announced/article16444430.ece

Q.21) WIMAX is related to which one of the following?

a) Biotechnology
b) Space technology
c) Missile technology
d) Communication technology

Q.21) Solution (d)

WiMAX (Worldwide Interoperability for Microwave Access) is a wireless industry coalition dedicated to the advancement of IEEE 802.16 standards for broadband wireless access (BWA) networks.

Read More - https://www.tutorialspoint.com/wimax/what_is_wimax.htm

Q.22) World Employment and Social Outlook report is released by

a) World Bank
b) International Labour Organisation
c) World Economic Forum
d) United Nations Development Programme

Q.22) Solution (b)

World Employment and Social Outlook: Trends 2017 - http://www.ilo.org/global/research/global-reports/weso/2017/WCMS_541211/lang--en/index.htm

Source: http://www.livemint.com/Politics/qvL3mTzzJYkuqb5DPN0TwI/Unemployment-in-India-to-increase-marginally-in-201718-UN.html

Q.23) Which of the following statements is/are correct?

1. Alpha Centauri is the closest star system to the Solar System
2. It consists of three stars: the pair Alpha Centauri A and Alpha Centauri B together with a small and faint red dwarf named Proxima Centauri

Select the correct code

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

Q.23) Solution (c)

It is the closest star system to the Solar System at a distance of 4.37 light-years

Centauri B together with a small and faint red dwarf, Alpha Centauri C (also named Proxima Centauri.

Source: http://indianexpress.com/article/technology/science/giant-telescope-in-chile-to-seek-habitable-planets-in-alpha-centauri-4469652/

Q.24) Consider the following statements about Hybrid Cloud

1. It is a cloud computing environment which uses a mix of on-premises, private cloud and third-party, public cloud services with orchestration between the two platforms.
2. It gives businesses greater flexibility and more data deployment options.
3. It can be used for big data processing

Which of the following statements is/are correct?

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

Q.24) Solution (d)

- It is a cloud computing environment which uses a mix of on-premises, private cloud and third-party, public cloud services with orchestration between the two platforms.
- By allowing workloads to move between private and public clouds as computing needs and costs change, hybrid cloud gives businesses greater flexibility and more data deployment options.
- Hybrid cloud is particularly valuable for dynamic or highly changeable workloads. It can be used for big data processing. A company, for example, could use hybrid cloud storage to retain its accumulated business, sales, test and other data, and then run analytical queries in the public cloud, which can scale to support demanding distributed computing tasks.

Read More - http://searchcloudcomputing.techtarget.com/definition/hybrid-cloud

Source: http://indianexpress.com/article/technology/tech-news-technology/microsoft-offers-to-collaborate-with-andhra-pradesh-on-e-governance-cyber-security-4479995/

Q.25) The 713th death anniversary of Sufi saint Nizamuddin Auliya was recently observed by reciting qawwals in the Nizamuddin dargah. Consider the following statements

1. Nizamuddin Auliya is a sufi saint belonging to the Qadiriyya order
2. His notable disciple was Amir Khusrow

Which of the following statements is/are correct?

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

Q.25) Solution (b)

Nizamuddin Auliya is a sufi saint belonging to the Chisti order.

Nizamuddin Auliya's predecessors were Qutbuddin Bakhthiyar Kaki, Khwaja Moinuddin Chisti. His notable disciple was Amir Khusrow.

The Chisti order is a Sunni Sufi order within the Sufi tradition of Islam. The order believed in drawing close to God through renunciation of the world and service to humanity.

This order is primarily followed in Afghanistan and Indian Subcontinent.

The Chisti order is the first of the four main Sufi orders – Chisti, Qadiriyya, Suhrawardiyya and Naqshbandi order.

Source: http://www.hindustantimes.com/art-and-culture/meet-the-nizami-bandhu-qawwali-s-rockstars/story-NlHuHmoLvv2omhiPRbOqHP.html