

## SCIENCE & TECHNOLOGY

### PRELIMS PREVIOUS YEAR QUESTIONS

No.	Topics	2019	2018	2017	2016	2015	2014	2013	2012	2011
1	Biotechnology	4	1	2	1	-	2	2	3	2
2.	Space	-	3	-	2	1	1	-	-	2
3.	ICT	3	5	1	4	1	-	-	-	3
4.	Nano technology	-	-	-	-	1	1	-	-	-
5.	Nuclear research	-	-	-	1	-	-	-	1	1
6.	Defence research	-	1	-	1	-	1	-	-	-
7.	Earth Science	-	-	-	-	1	-	-	-	-
8.	Scientific research	-	-	-	-	2	-	-	-	-
9.	Current affairs / Miscellaneous	3	-	1	2	1	1	-	-	4
	<b>Total</b>	<b>10</b>	<b>10</b>	<b>4</b>	<b>11</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>12</b>

## SCIENCE & TECHNOLOGY

### PREVIOUS YEAR QUESTIONS (PRELIMS)

#### NEO IAS TOPIC WISE ANALYSIS

2019

1. With reference to communication technologies, what is/are the difference/ differences between LTE (Long- Term Evolution) and VoLTE (Voice-over Long Term Evolution)?
1. LTE is commonly marketed as 3G and VoLTE is commonly marketed as advanced 3G.
  2. LTE is data-only technology and VoLTE is voice only technology.

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
2. In the context of digital technologies for entertainment, consider the following statements:
1. In Augmented Reality (AR), a simulated environment is created and the physical world is completely shut out.
  2. In Virtual Reality (VR), images generated from a computer are projected onto real-life objects or surroundings.
  3. AR allows individuals to be present in the world and improves the experience using the camera of smart-phone or PC.
  4. VR closes the world, and transposes an individual, providing complete immersion experience.

Which of the statements given above is/are correct?

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

3. With reference to the recent developments in science, which one of the following statements is **not** correct?
- Functional chromosomes can be created by joining segments of DNA taken from cells of different species.
  - Pieces of artificial functional DNA can be created in laboratories.
  - A pieces of DNA taken out from an animal cell can be made to replicate outside a living cell in a laboratory.
  - Cells taken out from plants and animals can be made to undergo cell division in laboratory petri dishes.

4. Consider the following statements:  
A digital signature is
- an electronic record that identifies the certifying authority issuing it
  - used to serve as a proof of identity of an individual to access information or server on Internet
  - an electronic method of signing an electronic document and ensuring that the original content is unchanged

Which of the statements given above is/are correct?

- (a) 1 only      (b) 2 and 3 only      (c) 3 only      (d) 1, 2 and 3
5. In the context of wearable technology, which of the following tasks is/are accomplished by wearable devices?
- Location identification of a person
  - Sleep monitoring of a person
  - Assisting the hearing impaired person

Select the correct answer using the code given below.

- (a) 1 only      (b) 2 and 3      (c) 3 only      (d) 1, 2 and 3
6. 'RNA interference (RNA)' technology has gained popularity in the last few years. Why?
- It is used in developing gene silencing therapies.
  - It can be used in developing therapies for the treatment of cancer.
  - It can be used to develop hormone replacement therapies.
  - It can be used to produce crop plants that are resistant to viral pathogens.

Select the correct answer using the code given below.

- (a) 1, 2 and 4      (b) 2 and 3      (c) 1 and 3      (d) 1 and 4 only
7. Which of the following are the reasons for the occurrence of multi-drug resistance in microbial pathogens in India?
- Genetic predisposition of some people
  - Taking incorrect doses of antibiotics to cure diseases
  - Using antibiotics in livestock farming
  - Multiple chronic diseases in some people

Select the correct answer using the code given below.

- (a) 1 and 2      (b) 2 and 3 only      (c) 1, 3 and 4      (d) 2, 3 and 4
8. What is cas9 protein that is often mentioned in news?
- A molecular scissors used in targeted gene editing
  - A biosensor used in the accurate detection of pathogens in patients
  - A gene that makes plants pest-resistant
  - A herbicidal substances synthesized in genetically modified crops

2018

9. Which one of the following statements is **not** correct?
- (a) Hepatitis B virus is transmitted much like HIV.
  - (b) Hepatitis B, unlike Hepatitis C, does not have a vaccine.
  - (c) Globally, the number of people infected with Hepatitis B and C viruses are several times more than those infected with HIV.
  - (d) Some of those infected with Hepatitis B and C viruses do not show the symptoms for many years.
10. In the context of which one of the following are the terms 'pyrolysis and plasma gasification' mentioned?
- (a) Extraction of rare earth elements
  - (b) Natural gas extraction technologies
  - (c) Hydrogen fuel-based automobiles
  - (d) Waste-to-energy technologies

1. The identity platform 'Aadhaar' provides open "Application Programming Interfaces (APIs)". What does it imply?
- 1. It can be integrated into any electronic device.
  - 2. Online authentication using iris is possible.

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

2. What is "Terminal High Altitude Area Defense (THAAD)", sometimes seen in the news?
- (a) An Israeli radar system
  - (b) India's indigenous anti-missile programme
  - (c) An American anti-missile system
  - (d) A defence collaboration between Japan and South Korea.

3. In which of the following areas can GPS technology be used?
- 1. Mobile phone operations
  - 2. Banking operations
  - 3. Controlling the power grids

Select the correct answer using the code given below:

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

4. The terms 'WannaCry, Petya and ExternalBlue' sometimes mentioned in the news recently are related to
- (a) Exoplanets
  - (b) Cryptocurrency
  - (c) Cyber attacks
  - (d) Mini satellites

5. With reference to the Indian Regional Navigation Satellite System (IRNSS), consider the following statements:
- 1. IRNSS has three satellites in geostationary and four satellites in geosynchronous orbits.

2. IRNSS covers entire India and about 5500 sq. km beyond its borders.
3. India will have its own satellite navigation system with full global coverage by the middle of 2019.

Which of the statements given above is/are correct?

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

6. With reference to the Genetically Modified mustard (GM mustard) developed in India, consider the following statements:

1. GM mustard has the genes of a soil bacterium that give the plant the property of pest-resistance to a wide variety of pests.
2. GM mustard has the genes that allow the plant cross-pollination and hybridization.
3. GM mustard has been developed jointly by the IARI and Punjab Agricultural university

Which of the statements given above is/are correct?

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

7. Consider the following pairs:

<i>Terms sometimes Seen in news</i>	-	<i>Context/Topic</i>
1. Belle II experiment	-	Artificial Intelligence
2. Blockchain technology	-	Digital/Cryptocurrency
3. CRISPR – Cas9	-	Particle Physics

Which of the pairs given above is/are correctly matched?

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

8. When the alarm of your smartphone rings in the morning, you wake up and tap it to stop the alarm which causes your geyser to be switched on automatically. The smart mirror in your bathroom shows the day's weather and also indicates the level of water in your overhead tank. After you take some groceries from your refrigerator for making breakfast, it recognises the shortage of stock in it and places an order for the supply of fresh grocery items. When you step out of your house and lock the door, all lights, fans, geysers and AC machines get switched off automatically. On your way to office, your car warns you about traffic congestion ahead and suggests an alternative route, and if you are late for a meeting, it sends a message to your office accordingly.

In the context of emerging communication technologies, which one of the following terms best applies to the above scenario?

- (a) Border Gateway Protocol
- (b) Internet of Things
- (c) Internet Protocol
- (d) Virtual Private Network

9. "3D printing" has applications in which of the following?

1. Preparation of confectionary items
2. Manufacture of bionic ears
3. Automotive industry
4. Reconstructive surgeries
5. Data processing technologies

Select the correct answer using the code given below:

- (a) 1, 3 and 4 only              (b) 2, 3 and 5 only              (c) 1 and 4 only              (d) 1, 2, 3, 4 and 5

10. With reference to India's satellite launch vehicles, consider the following statements:
1. PSLVs launch the satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
  2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
  3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid and fourth stages using liquid rocket engines.

Which of the statements given above is/are correct?

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

**2017**

1. With reference to agriculture in India, how can the technique of 'genome sequencing', often seen in the news, be used in the immediate future?
1. Genome sequencing can be used to identify genetic markers for diseases resistance and drought tolerance in various crop plants.
  2. This technique helps in reducing the time required to develop new varieties of crop plants.
  3. It can be used to decipher the host-pathogen relationships in crops.
- Select the correct answer using the code given below:
- (a) 1 only      (b) 2 and 3 only      (c) 1 and 3 only      (d) 1, 2 and 3
2. What is the application of Somatic Cell Nuclear Transfer Technology?
- (a) Production of biolarvicides
  - (b) Manufacture of biodegradable plastics
  - (c) Reproductive cloning of animals
  - (d) Production of organisms free of diseases
3. In India, it is legally mandatory for which of the following to report on cyber security incidents?
1. Service providers
  2. Data centres
  3. Body corporate
- Select the correct answer using the code given below:
- (a) 1 only      (b) 1 and 2 only      (c) 3 only      (d) 1, 2 and 3
4. Organic Light Emitting Diodes (OLEDs) are used to create digital display in many devices. What are the advantages of OLED displays over Liquid Crystal displays?
1. OLED displays can be fabricated on flexible plastic substrates.
  2. Roll-up displays embedded in clothing can be made using OLEDs.
  3. Transparent displays are possible using OLEDs.
- Select the correct answer using the code given below:
- (a) 1 and 3 only      (b) 2 only  
(c) 1, 2 and 3      (d) None of the above statements is correct

**2016**

1. With reference to 'LiFi', recently in the news, which of the following statement is/are correct?
1. It uses light as the medium for high speed data transmission.
  2. It is a wireless technology and is several times faster than 'WiFi'.
- 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
2. In the context of the developments in Bioinformatics, the term 'transcriptome', sometimes seen

in the news, refers to

- (a) a range of enzymes used in genome editing
- (b) the full range of mRNA molecules expressed by an organism
- (c) the description of the mechanism of gene expression
- (d) a mechanism of genetic mutations taking place in cells

3. Project Loon”, sometimes seen in the news, is related to
- (a) waste management technology
  - (b) wireless communication technology
  - (c) solar power production technology
  - (d) water conservation technology
4. Which one of the following is the best description of ‘INS Astradharini’, that was in the news recently?
- (a) Amphibious warfare ship
  - (b) Nuclear-powered submarine
  - (c) Torpedo launch and recovery vessel
  - (d) Nuclear-powered aircraft carrier
5. What is ‘Greased Lightning-10 (GL-10)’, recently in the news?
- (a) Electric plane tested by NASA
  - (b) Solar-powered two-seater aircraft designed by Japan
  - (c) Space observatory launched by China
  - (d) Reusable rocket designed by ISRO

6. With reference to ‘Bitcoins’, sometimes seen in the news, which of the following statements is/are correct?
1. Bitcoins are tracked by the Central Banks of the countries.
  2. Anyone with a Bitcoin address can send and receive Bitcoins from anyone else with a Bitcoin address.
  3. Online payments can be sent without either side knowing the identity of other.

Select the correct answer using the code given below.

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

7. India is an important member of the ‘International Thermonuclear Experimental Reactor’. If this experiment succeeds, what is the immediate advantage for India?
- (a) It can use thorium in place of uranium for power generation
  - (b) It can attain a global role in satellite navigation
  - (c) It can drastically improve the efficiency of its fission reactors in power generation
  - (d) It can build fusion reactors for power generation

8. Regarding ‘DigiLocker’ sometimes seen in the news, which of the following statements is/are correct?
1. It is a digital locker system offered by the Government under Digital India Programme.
  2. It allows you to access your e-documents irrespective of your physical location.

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

9. With reference to 'Astrosat' the astronomical observatory launched by India, which of the following statements is/are correct?
1. Other than USA and Russia, India is the only country to have launched a similar observatory into space.
  2. Astrosat is a 2000 kg satellite placed in an orbit at 1650km above the surface of the Earth.

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

10. Consider the following statements:

The Mangalyaan launched by ISRO

1. Is also called the Mars Orbiter Mission.
2. Made India the second Country to have a Spacecraft orbit the Mars after USA.
3. Made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

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

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

11. A recent movie titled *The Man Who Knew infinity* is based on the biography of

- (a) S. Ramanujan
- (b) S. Chandrasekhar
- (c) S.N.Bose
- (d) C.V. Raman

2015

1. In which of the following activities are **Indian Remote Sensing (IRS) satellites** used?

1. Assessment of crop productivity
2. Locating groundwater resources
3. Mineral exploration
4. Telecommunications
5. Traffic studies

Select the correct answer using the code given below.

- (a) 1, 2 and 3 only                      (b) 4 and 5 only                      (c) 1 and 2 only                      (d) 1, 2, 3, 4 and 5

2. The term '**IndARC**', sometimes seen in the news, is the name of

- (a) an indigenously developed radar system inducted into Indian Defence
- (b) India's satellite to provide services to the countries of Indian Ocean Rim
- (c) a scientific establishment set up by India in Antarctic region
- (d) India's underwater observatory to scientifically study the Arctic region

3. Which of the following statements is/are correct regarding **National Innovation Foundation-India (NIF)**?

1. NIF is an autonomous body of the Department of Science and Technology under the Central Government.
2. NIF is an initiative to strengthen the highly advanced scientific research in India's premier scientific institution in collaboration with highly advanced foreign scientific institutions

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

4. With reference to the use of **nanotechnology** in health sector, which of the following statements is/are correct?

1. Targeted drug delivery is made possible by nanotechnology.
2. Nanotechnology can largely contribute to gene therapy.

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

5. In the context of modern scientific research, consider the following statements about 'IceCube', a particle detector located at South Pole, which was recently in the news:

1. It is the world's largest neutrino detector, encompassing a cubic kilometer of ice.
2. It is a powerful telescope to search for dark matter.
3. It is buried deep in the ice.

Select the correct answer using the code given below.

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

6. With reference to '**Near Field Communication (NFC) Technology**', which of the following statements is/are correct?

1. It is a contactless communication technology uses electromagnetic radio fields.
2. NFC is designed for use by devices which can be at a distance of even a metre from each other.
3. NFC can use encryption when sending sensitive information.

Select the correct answer using the code given below.

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

7. **Indira Gandhi Prize** for Peace, Disarmament and Development for 2014 was given to which one of the following?

- (a) Bhabha Atomic Research Centre
- (b) Indian Institute of Science
- (c) Indian Space Research Organization
- (d) Tata Institute of Fundamental Research

2014

1. With reference to technologies for **solar power production**, consider the following statements:
  1. 'Photovoltaics' is a technology that generates electricity by direct conversion of light into electricity, while 'Solar Thermal' is a technology that utilizes the Sun's rays to generate heat which is further used in electricity generation process.
  2. Photovoltaics generates Alternating Current (AC), while Solar Thermal generates Direct Current (DC).
  3. India has manufacturing base for Solar Thermal technology, but not for Photovoltaics.

Which of the statements given above is/ are correct?

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

2. With reference to **Agni-IV Missile**, which of the following statements is/are correct?

1. It is a surface-to-surface missile.
2. It is fuelled by liquid propellant only.
3. It can deliver one-ton nuclear warheads about 7500 km away.

Select the correct answer using the code given below:

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



3. In addition to **fingerprint scanning**, which of the following can be used in the biometric identification of a person?

1. Iris scanning
2. Retinal scanning
3. Voice recognition

Select the correct answer using the code given below.

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

4. Which of the following pairs is/ are correctly matched?

<i>Spacecraft</i>		<i>Purpose</i>
1. Cassini-Huygens	:	Orbiting the Venus and transmitting data to the Earth
2. Messenger	:	Mapping and investigating the Mercury
3. Voyager 1 and 2	:	Exploring the outer solar system

Select the correct answer using the code given below.

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

5. Consider the following techniques / phenomena:

1. Budding and grafting in fruit plants
2. Cytoplasmic male sterility
3. Gene silencing

Which of the above is /are used to create **transgenic crops**?

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

6. There is some concern regarding the **nano particles** of some chemical elements that are used by the industry in the manufacture of various products. Why?

1. They can accumulate in the environment, and contaminate water and soil.
2. They can enter the food chains.
3. They can trigger the production of free radicals.

Select the correct answer using the code given below.

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

2013

1. **Mycorrhizal biotechnology** has been used in rehabilitating degraded sites because mycorrhiza enables the plants to

1. resist drought and increase absorptive area
2. tolerate extremes of pH.
3. resist disease infestation

Select the correct answer using the codes given below.

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

2. Recombinant **DNA technology** (Genetic Engineering) allows genes to be transferred

1. across different species of plants
2. from animals to plants
3. from microorganisms to higher organisms

Select the correct answer using the codes given below:

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

2012

1. With reference to '**stem cells**' frequently in the news, which of the following statements is/are correct?
1. Stem cells can be derived from mammals only.
  2. Stem cells can be used for screening new drugs.
  3. Stem cells can be used for medical therapies.

Select the correct answer using the codes given below:

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

2. To meet its rapidly growing energy demand, some opine that India should pursue research and development on thorium as the future fuel of **nuclear energy**. In this context, what advantage does thorium hold over Uranium?
1. Thorium is far more abundant in nature than Uranium.
  2. On the basis of per unit mass of mined mineral, thorium can generate more energy compared to natural Uranium.
  3. Thorium produces less harmful waste compared to Uranium.

Which of the statements given above is/are correct?

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

3. What are the reasons for the people's resistance to the introduction of **Bt brinjal** in India?
1. Bt Brinjal has been created by inserting a gene from a soil fungus into its genome.
  2. The seeds of Bt Brinjal are terminator seeds and therefore, the farmers have to buy the seeds before every season from the seed companies.
  3. There is an apprehension that the consumption of Bt brinjal may have adverse impact on health.
  4. There is some concern that the introduction of Bt. brinjal may have adverse effect on the biodiversity.

Select the correct answer using the codes given below:

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

4. Other than resistance to pests, what are the prospects for which **genetically engineered plants** have been created?
1. To enable them to withstand drought
  2. To increase the nutritive value of the produce
  3. To enable them to grow and do photosynthesis in spaceships and space stations
  4. To increase their shelf life

Select the correct answer using the codes given below:

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

2011

1. Satellites used for telecommunication relay are kept in a **geostationary orbit**. A satellite is said to be in such an orbit when:
1. The orbit is geosynchronous
  2. The orbit is circular
  3. The orbit lies in the plane of the Earth's equator
  4. The orbit is at an altitude of 22,236 km.

Select the correct answer using the codes given below:

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

2. At present, scientists can determine the arrangement or relative positions of **genus of DNA**

**sequences on a chromosome.** How does this knowledge benefit us?

1. It is possible to know the pedigree of livestock.
2. It is possible to understand the causes of all human diseases.
3. It is possible to develop disease-resistant animal breeds.

Which of the statements given above is/are correct?

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

**3. Microbial fuel cells** are considered a source of sustainable energy. Why?

1. They use living organisms as catalysts to generate electricity from certain substrates.
2. They use a variety of inorganic materials as substrates.
3. They can be installed in waste water treatment plants to cleanse water and produce electricity.

Which of the statements given above is/are correct?

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

4. A genetically engineered form of brinjal, known as the **Bt-brinjal**, has been developed. The objective of this is

- (a) to make it pest resistant
- (b) to improve its taste and nutritive qualities
- (c) to make it drought-resistant
- (d) to make its shelf-life longer

5. The function of **heavy** water in a nuclear reactor is to

- (a) Slow down the speed of neutrons
- (b) Increase the speed of neutrons
- (c) Cool down the reactor
- (d) Stop the nuclear reaction

6. A company marketing food products advertises that its do not contain **trans-fats**. What does this campaign signify to the customers?

1. The food products are not made out of hydrogenated oils
2. The food products are not made out of animal fats/oils
3. The oils used are not likely to damage the cardiovascular health of the consumers

Which of the statements given above is/are correct?

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

7. What is the difference between **Blue-tooth** and **Wi-Fi** devices?

- (a) Bluetooth uses 2-4GHz radio frequency band, whereas Wi-Fi can use 2-4GHz or 5GHz frequency band
- (b) Bluetooth is used for Wireless Local Area Networks (WLAN) only, whereas Wi-Fi is used for Wireless Wide Area Networks (WWAN) only
- (c) When information is transmitted between two devices using Blue-tooth technology, the devices have to be in the line of sight of each other, but when Wi-Fi technology is used the devices need not be in the line of sight of each other
- (d) The statements (a) and (b) given above are correct in this context

8. 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, 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

9. What is the difference between a **CFL** and an **LED** lamp?

- 1. To produce light, a CFL uses mercury vapour and phosphor while an LED lamp uses semiconductor material.
- 2. The average life span of a CFL is much longer than that of an LED lamp.
- 3. A CFL is less energy-efficient as compared to an LED lamp.

Which of the statements given above is/are correct?

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

10. A new optical disc format known as the **Blu-ray Disc (BD)** is becoming popular. In what way is it different from the traditional DVD?

- 1. DVD supports Standard Definition video while BD supports High Definition video.
- 2. Compared to a DVD, the BD format has several times more storage capacity
- 3. Thickness of BD is 2.4mm while that of DVD is 1.2mm.

Which of the statements given above is/are correct?

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

11. An **artificial satellite** orbiting around the Earth does not fall down. This is so because the attraction of earth

- (a) Does not exist at such distance
- (b) Is neutralized by the attraction of the moon
- (c) Provides the necessary speed for its steady motion
- (d) Provides the necessary acceleration for its motion

12. What is "**Virtual Private Network**"?

- (a) It is a private computer network of an organisation where the remote users can transmit encrypted information through the server of the organisation
- (b) It is a computer network across a public internet that provides users access to their organisation's network while maintaining the security of the information transmitted
- (c) It is a computer network in which users can access a shared pool of computing resources through a service provider
- (d) None of the statements (a), (b) and (c) given above is a correct description of Virtual Private Network

13. Recently "oilzapper" was in the news. What is it?

- (a) It is an eco-friendly technology for the remediation of oily sludge and oil spills
- (b) It is the latest technology developed for under sea oil exploration
- (c) It is a genetically engineered high bio-fuel yielding maize variety
- (d) It is the latest technology to control the accidentally caused flames from oil wells

