

UPSC Prelims Science & Technology Questions (PYQs)

2023

Q1. Consider the following:

1. Aerosols
2. Foam agents
3. Fire retardants
4. Lubricants

In the making of how many of the above are hydrofluorocarbons used?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

Correct answer: c

Q2. 'Wolbachia method' is sometimes talked about with reference to which one of the following?

- (a) Controlling the viral diseases spread by mosquitoes
- (b) Converting crop residues into packing material
- (c) Producing biodegradable plastics
- (d) Producing biochar from thermo-chemical conversion of biomass

Correct answer: a

Q3. 'Aerial metagenomics' best refers to which one of the following situations?

- (a) Collecting DNA samples from air in a habitat at one go
- (b) Understanding the genetic makeup of avian species of a habitat
- (c) Using air-borne devices to collect blood samples from moving animals
- (d) Sending drones to inaccessible areas to collect plant and animal samples from land surfaces and water bodies

Correct answer: a

- Q4. 'Microsatellite DNA' is used in the case of which one of the following?
- (a) Studying the evolutionary relationships among various species of fauna
 - (b) Stimulating 'stem cells' to transform into diverse functional tissues
 - (c) Promoting clonal propagation of horticultural plants
 - (d) Assessing the efficacy of drugs by conducting series of drug trials in a population"

Correct answer: a

Q5. Consider the following statements :

1. Carbon fibres are used in the manufacture of components used in automobiles and aircrafts.
2. Carbon fibres once used cannot be recycled.

Which of the statements give above is/are correct?

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

Correct answer: a

Q6. Consider the following actions :

1. Detection of car crash/collision which results in the deployment of airbags almost instantaneously.
2. Detection of accidental free fall of a laptop towards the ground which results in the immediate turning off of the hard drive
3. Detection of the tilt of smartphone which results in the rotation of display between portrait and landscape mode

In how many of the above action is the function of accelerometer required?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Correct answer: c

Q7. Consider the following pairs :

Objects in space Description

1. Cepheids Giant clouds of dust and gas in space
2. Nebulae Stars which brighten and dim periodically
3. Pulsars Neutron stars that are formed when massive stars run out of fuel and collapse

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Correct answer: a

Q8. Which one of the following countries has its own Satellite Navigation System?

- (a) Australia
- (b) Canada
- (c) Israel
- (d) Japan

Correct answer: d

Q9. Consider the following statements :

1. Ballistic missiles are jet-propelled at subsonic speeds throughout their flights, while cruise missiles are rocketpowered only in the initial phase of flight.
2. Agni-V is a medium-range supersonic cruise missile, while BrahMos is a solid-fuelled intercontinental ballistic missile.

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

Correct answer: d

2022

Q1. Which one of the following statements best describes the role of B cells and T cells in the human body?

- (a) They protect the body from environmental allergens.
- (b) They alleviate the body's pain and inflammation.
- (c) They act as immunosuppressants in the body.
- (d) They protect the body from the diseases caused by pathogens.

Correct Answer: d

Q2. Consider the following statements:

1. Other than those made by humans, nanoparticles do not exist in nature.
2. Nanoparticles of some metallic oxides are used in the manufacture of some cosmetics.
3. Nanoparticles of some commercial products which enter the environment are unsafe for humans.

Which of the statements given above is/are correct?

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

Correct answer: d

Q3. Consider the following statements :

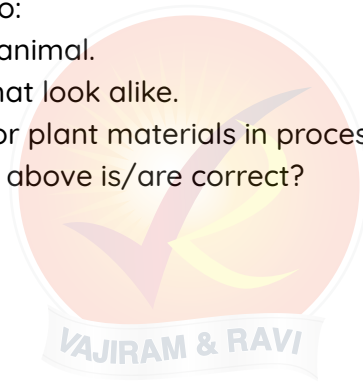
DNA Barcoding can be a tool to:

1. assess the age of a plant or animal.
2. distinguish among species that look alike.
3. identify undesirable animal or plant materials in processed foods.

Which of the statements given above is/are correct?

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

Correct answer: d



Q4. With reference to polyethylene terephthalate, the use of which is so widespread in our daily lives, consider the following statements:

1. Its fibres can be blended with wool and cotton fibres to reinforce their properties.
2. Containers made of it can be used to store any alcoholic beverage.
3. Bottles made of it can be recycled into other products.
4. Articles made of it can be easily disposed of by incineration without causing greenhouse gas emissions.

Which of the statements given above are correct?

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

Correct answer: a

Q5. With reference to Web 3.0, consider the following statements:

1. Web 3.0 technology enables people to control their own data.
2. In Web 3.0 world, there can blockchain based social networks.
3. Web 3.0 is operated by users collectively rather than a corporation.

Which of the statements given above are correct?

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

Correct answer: d

Q6. With reference to "Software as a Service (SaaS)", consider the following statements:

1. SaaS buyers can customise the user interface and can change data fields.
2. SaaS users can access their data through their mobile devices.
3. Outlook, Hotmail and Yahoo! Mail are forms of SaaS.

Which of the statements given above are correct?

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

Correct answer: d

Q7. Which one of the following statements best reflects the idea behind the "Fractional Orbital Bombardment System" often talked about in media?

- (a) A hypersonic missile is launched into space to counter the asteroid approaching the Earth and explode it in space.
- (b) A spacecraft lands on another planet after making several orbital motions.
- (c) A missile is put into a stable orbit around the Earth and deorbits over a target on the Earth.
- (d) A spacecraft moves along a comet with the same speed and places a probe on its surface.

Correct answer: c

Q8. Which one of the following is the context in which the term "qubit" is mentioned?

- (a) Cloud Services
- (b) Quantum Computing
- (c) Visible Light Communication Technologies
- (d) Wireless Communication Technologies

Correct answer: b

Q9. Consider the following communication technologies:

- 1. Closed-circuit Television
- 2. Radio Frequency Identification
- 3. Wireless Local Area Network

Which of the above are considered Short-Range devices/technologies?

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

Correct answer: d



Q10. Consider the following statements:

- 1. Biofilms can form on medical implants within human tissues.
- 2. Biofilms can form on food and food processing surfaces.
- 3. Biofilms can exhibit antibiotic resistance.

Which of the statements given above are correct?

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

Correct answer: d

Q11. Consider the following statements in respect of probiotics:

- 1. Probiotics are made of both bacteria and yeast.
- 2. The organisms in probiotics are found in foods we ingest but they do not naturally occur in our gut.
- 3. Probiotics help in the digestion of milk sugars.

Which of the statements given above is/are correct?

- (a) 1 only

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

Correct answer: c

Q12. In the context of vaccines manufactured to prevent COVID-19 pandemic, consider the following statements:

1. The Serum Institute of India produced COVID-19 vaccine named Covishield using mRNA platform.
2. Sputnik V vaccine is manufactured using vector based platform.
3. COVAXIN is an inactivated pathogen based vaccine.

Which of the statements given above are correct?

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

Correct answer: b

Q13. If a major solar storm (solar flare) reaches the Earth, which of the following are the possible effects on the Earth?

1. GPS and navigation systems could fail.
2. Tsunamis could occur at equatorial regions.
3. Power grids could be damaged.
4. Intense auroras could occur over much of the Earth.
5. Forest fires could take place over much of the planet.
6. Orbits of the satellites could be disturbed.
7. Shortwave radio communication of the aircraft flying over polar regions could be interrupted.

Select the correct answer using the code given below:

- (a) 1, 2, 4 and 5 only
- (b) 2, 3, 5, 6 and 7 only
- (c) 1, 3, 4, 6 and 7 only
- (d) 1, 2, 3, 4, 5, 6 and 7

Correct answer: c

Q1. Which one of the following is used in preparing a natural mosquito repellent?

- (a) Congress grass
- (b) Elephant grass
- (c) Lemongrass
- (d) Nut grass

Correct answer: c

Q2. Consider the following kinds of organisms:

- 1. Copepods
- 2. Cyanobacteria
- 3. Diatoms
- 4. Foraminifera

Which of the above are primary producers in the food chains of oceans?

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

Correct answer: b

Q3. Magnetite particles, suspected to cause neurodegenerative problems, are generated as environmental pollutants from which of the following?

- 1. Brakes of motor vehicles
- 2. Engines of motor vehicles
- 3. Microwave stoves within homes
- 4. Power plants
- 5. Telephone lines

Select the correct answer using the code given below.

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

Correct answer: b

Q4. In the context of hereditary diseases, consider the following statements:

- 1. Passing on mitochondrial diseases from parent to child can be prevented by mitochondrial replacement therapy either before or after in vitro fertilization of the egg.

2. A child inherits mitochondrial diseases entirely from mother and not from father.

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

Correct answer: c

Q5. Bollgard I and Bollgard II technologies are mentioned in the context of

- (a) clonal propagation of crop plants
- (b) developing genetically modified crop plants
- (c) production of plant growth substances
- (d) production of biofertilizers

Correct answer: b

Q6. In a pressure cooker, the temperature at which the food is cooked depends mainly upon which of the following?

1. Area of the hole in the lid
2. Temperature of the flame
3. Weight of the lid

Select the correct answer using the code given below.

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

Correct answer: c

Q7. Consider the following:

1. Bacteria
2. Fungi
3. Virus

Which of the above can be cultured in an artificial/synthetic medium?

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

Correct answer: a

Q8. Consider the following statements:

1. Adenoviruses have single-stranded DNA genomes whereas retroviruses have double-stranded DNA genomes.
2. Common cold is sometimes caused by an adenovirus whereas AIDS is caused by a retrovirus.

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

Correct answer: b

Q9. Water can dissolve more substances than any other liquid because

- (a) it is dipolar in nature
- (b) it is a good conductor of heat
- (c) it has a high value of specific heat
- (d) it has an oxide of hydrogen

Correct answer: a

Q10. With reference to street lighting, how do sodium lamps differ from LED lamps?

1. Sodium lamps produce light in 360 degrees but it is not so in the case of LED lamps.
2. As street lights, sodium lamps have a longer lifespan than LED lamps.
3. The spectrum of visible light from sodium lamps is almost monochromatic while LED lamps offer significant colour advantages in street lighting.

Select the correct answer using the code given below.

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

Correct answer: c

Q11. The term 'ACE2' is talked about in the context of

- (a) genes introduced in the genetically modified plants
- (b) development of India's own satellite navigation system
- (c) radio collars for wildlife tracking
- (d) spread of viral diseases

Correct answer: d

Q12. Bisphenol A (BPA), a cause of concern, is a structural/key component in the manufacture of which of the following kinds of plastics?

- (a) Low-density polyethylene
- (b) Polycarbonate
- (c) Polyethylene terephthalate
- (d) Polyvinyl chloride

Correct answer: b

Q13. Triclosan', considered harmful when exposed to high levels for a long time, is most likely present in which of the following?

- (a) Food preservatives
- (b) Fruit-ripening substances
- (c) Reused plastic containers
- (d) Toiletries

Correct answer: d

Q14. Which one of the following is a reason why astronomical distances are measured in light-years?

- (a) Distances among stellar bodies do not change.
- (b) Gravity of stellar bodies does not change.
- (c) Light always travels in a straight line.
- (d) Speed of light is always the same.

Correct answer: d

2020

Q1. In India, under cyber insurance for individuals, which of the following benefits are generally covered, in addition to payment for the loss of funds and other benefits?

1. Cost of restoration of the computer system in case of malware disrupting access to one's computer
2. Cost of a new computer if some miscreant wilfully damages it, if proved so
3. Cost of hiring a specialized consultant to minimize the loss in case of cyber

extortion

4. Cost of defence in the Court of Law if any third party files a suit

Select the correct answer using the code given below:

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

Correct answer: b

Q2. With reference to Visible Light Communication (VLC) technology, which of the following statements are correct?

- 1. VLC uses electromagnetic spectrum wavelengths 375 to 780 nm.
- 2. VLC is known as long-range optical wireless communication.
- 3. VLC can transmit large amounts of data faster than Bluetooth.
- 4. VLC has no electromagnetic interference.

Select the correct answer using the code given below:

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

Correct answer: c



Q3. With the present state of development, Artificial Intelligence can effectively do which of the following?

- 1. Bring down electricity consumption in industrial units
- 2. Create meaningful short stories and songs
- 3. Disease diagnosis
- 4. Text-to-Speech Conversion
- 5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

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

Correct answer: b

Q4. In the context of recent advances of human reproductive technology, “Pronuclear Transfer” is used for

- (a) fertilization of egg in vitro by the donor sperm
- (b) genetic modification of sperm producing cells
- (c) development of stem cells into functional embryos
- (d) prevention of mitochondrial diseases in offspring

Correct answer: d

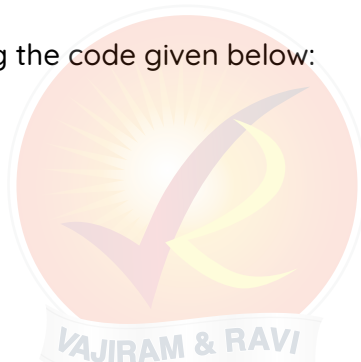
Q5. Which of the following statements are correct regarding the general difference between plant and animal cells?

- 1. Plant cells have cellulose cell walls whilst animal cells do not.
- 2. Plant cells do not have plasma membranes unlike animal cells which do.
- 3. Mature plant cell has one large vacuole whilst an animal cell has many small vacuoles.

Select the correct answer using the code given below:

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

Correct answer: c



Q6. In India, the term “Public Key Infrastructure” is used in the context of

- (a) Digital security infrastructure
- (b) Food security infrastructure
- (c) Health care and education infrastructure
- (d) Telecommunication and transportation infrastructure

Correct answer: a

Q7. What is the importance of using Pneumococcal Conjugate Vaccines in India?

- 1. These vaccines are effective against pneumonia as well as meningitis and sepsis.
- 2. Dependence on antibiotics that are not effective against drug-resistant bacteria can be reduced.
- 3. These vaccines have no side effects and cause no allergic reactions.

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

Correct answer: b

Q8. Consider the following statements:

1. Genetic changes can be introduced in the cells that produce eggs or sperms of a prospective parent.
2. A person's genome can be edited before birth at the early embryonic stage.
3. Human induced pluripotent stem cells can be injected into the embryo of a pig.

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 2 only

(d) 1, 2 and 3

Correct answer: d

Q9. "The experiment will employ a trio of spacecraft flying in formation in the shape of an equilateral triangle that has sides one million kilometres long, with lasers shining between the craft." The experiment in question refers to

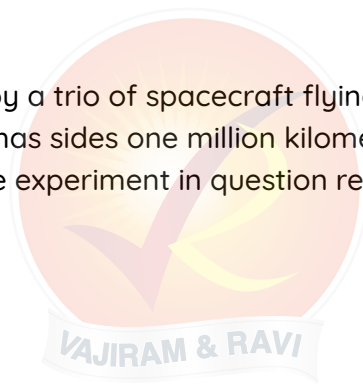
(a) Voyager-2

(b) New horizons

(c) Lisa Pathfinder

(d) Evolved LISA

Correct answer: d



Q10. Consider the following activities:

1. Spraying pesticides on a crop field
2. Inspecting the craters of active volcanoes
3. Collecting breath samples from spouting whales for DNA analysis

At the present level of technology, which of the above activities can be successfully carried out by using drones?

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Correct answer: d

Q11. With reference to carbon nanotubes, consider the following statements:

1. They can be used as carriers of drugs and antigens in the human body.
2. They can be made into artificial blood capillaries for an injured part of the human body.
3. They can be used in biochemical sensors.
4. Carbon nanotubes are biodegradable.

Which of the statements given above are correct?

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

Correct answer: c

2019

Q1. For the measurement/estimation of which of the following are satellite images/remote sensing data used?

1. Chlorophyll content in the vegetation of a specific location
2. Greenhouse gas emissions from rice paddies of a specific location
3. Land surface temperatures of a specific location

Select the correct answer using the code given below.

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

Correct answer: d

Q2. 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

Correct answer: d

Q3. 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

Correct answer: b

Q4. The word 'Denisovan' is sometimes mentioned in media in reference to

(a) fossils of a kind of dinosaurs

(b) an early human species

(c) a cave system found in North-East India

(d) a geological period in the history of Indian subcontinent

Correct answer: b

Q5. With reference to the recent developments in science, which one of the following statements is not correct?

(a) Functional chromosomes can be created by joining segments of DNA taken from cells of different species.

(b) Pieces of artificial functional DNA can be created in laboratories.

(c) A piece of DNA taken out from an animal cell can be made to replicate outside a living cell in a laboratory.

(d) Cells taken out from plasma and animals can be made to undergo cell division in laboratory petri dishes.

Correct answer: a

Q6. Consider the following statements:

A digital signature is

1. an electronic record that identifies the certifying authority issuing it
2. used to serve as a proof of identity of an individual to access information or server on Internet
3. 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

Correct answer: c

Q7. In the context of wearable technology, which of the following tasks is/are accomplished by wearable devices?

1. Location identification of a person
2. Sleep monitoring of a person
3. Assisting the hearing impaired person

Select the correct answer using the code given below:

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

Correct answer: d

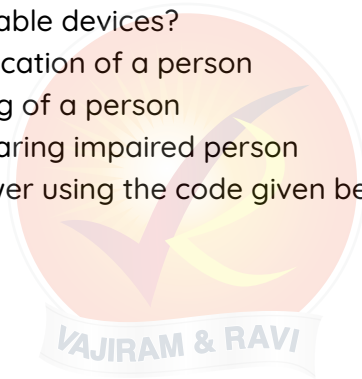
Q8. RNA interference (RNAi)' technology has gained popularity in the last few years. Why?

1. It is used in developing gene silencing therapies.
2. It can be used in developing therapies for the treatment of cancer.
3. It can be used to develop hormone replacement therapies.
4. 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

Correct answer: a



Q9. Recently, Scientists observed the merger of giant blackholes' billions of light-years away from the Earth. What is the significance of this observation?

- (a) 'Higgs boson particles' were detected.
- (b) 'Gravitational waves' were detected.
- (c) Possibility of inter-galactic space travel through 'wormhole' was confirmed.
- (d) It enabled the scientists to understand 'singularity'.

Correct answer: b

Q10. Which of the following are the reasons for the occurrence of multi-drug resistance in microbial pathogens in India?

1. Genetic predisposition of some people
2. Taking incorrect doses of antibiotics to cure diseases
3. Using antibiotics in livestock farming
4. 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

Correct answer: b



Q11. What is Cas9 protein that is often mentioned in news?

- (a) A molecular scissors used in targeted gene editing
- (b) A biosensor used in the accurate detection of pathogens in patients
- (c) A gene that makes plants pest-resistant
- (d) A herbicidal substance synthesized in genetically modified crops

Correct answer: a

Q12. 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.

Correct answer: b

2018

Q1. 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

Correct answer: d

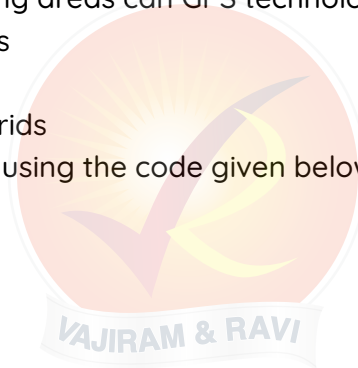
Q2. In which of the following areas can GPS technology be used?

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

Correct answer: d



Q3. The terms 'WannaCry, Petya and EternalBlue' sometimes mentioned in the news recently are related to

- a) Exoplanets
- b) Cryptocurrency
- c) Cyber attacks
- d) Mini satellites

Correct answer: c

Q4. 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

Correct answer: a

Q5. Consider the following statements:

- 1. Light is affected by gravity.
- 2. The Universe is constantly expanding.
- 3. Matter warps its surrounding space-time.

Which of the above is/are the prediction/predictions of Albert Einstein's General Theory of Relativity, often discussed in media?

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

Correct answer: d



Q6. Consider the following pairs:

Sl. No.	Terms sometimes seen in news	Context/Topic
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

Correct answer: b

Q7. 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

Correct answer: b

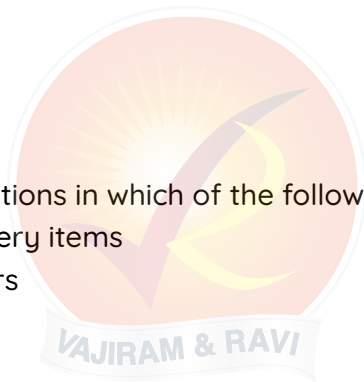
Q8. "3D printing" has applications in which of the following?

1. Preparation of confectionery 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

Correct answer: d



Q9. "With reference to India's satellite launch vehicles, consider the following statements:

1. PSLVs launch the satellite 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 rocket motors; and the second 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

Correct answer: a

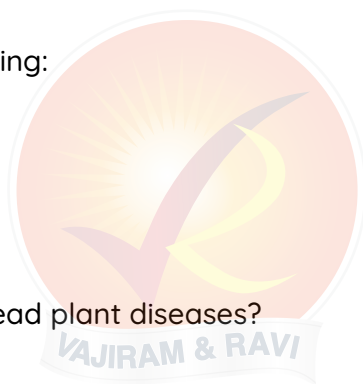
Q10. Consider the following:

1. Birds
2. Dust blowing
3. Rain
4. Wind blowing

Which of the above spread plant diseases?

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

Correct answer: d



2017

Q1. Consider the following pairs:

Sl. No.	Commonly used/consumed materials	Unwanted or controversial chemicals likely to be found in them
1.	Lipstick	: Lead
2.	Soft drinks	: Brominated vegetable oils

3. Chinese fast food : Monosodium glutamate
Which of the pairs given above is/are correctly matched?

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

Correct answer: d

Q2. 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

Correct answer: c

Q3. 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

Correct answer: c

Q4. In India, it is legally mandatory for which of the following to report on cyber security incidents?

- 1. Service providers
- 2. Data centers
- 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

Correct answer: d

Q5. What is the purpose of the 'evolved Laser Interferometer Space Antenna (eLISA)' project?

a) To detect neutrinos

b) To detect gravitational waves

c) To detect the effectiveness of missile defense system

d) To study the effect of solar flares on our communication systems

Correct answer: b

Q6. Consider the following statements:

1. The Nuclear Security Summits are periodically held under the aegis of the United Nations.

2. The International Panel on Fissile Materials is an organ of the International Atomic Energy Agency.

Which of the statements given above is/are correct?

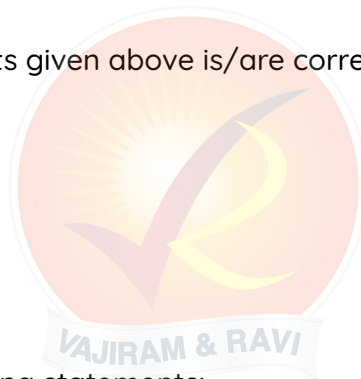
a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2

Correct answer: c



Q7. Consider the following statements:

1. In tropical regions, Zika virus disease is transmitted by the same mosquito that transmits dengue.

2. Sexual transmission of Zika virus disease 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

Correct answer: c

Q8. The terms 'Event Horizon', 'Singularity', 'String Theory' and 'Standard Model' are sometimes seen in the news in the context of:

- a) Observation and understanding of the Universe
- b) Study of the solar and the lunar eclipses
- c) Placing satellites in the orbit of the Earth
- d) Origin and evolution of living organisms on the earth

Correct answer: a

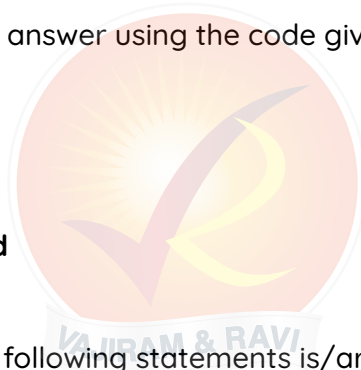
Q9. With reference to agriculture in India, how can the technique of 'genome sequencing', often seen in the news, be used in the immediate future?

- 1. Genome sequencing can be used to identify genetic markers for disease 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

Correct answer: d



Q10. Which of the following statements is/are correct regarding Smart India Hackathon 2017?

- 1. It is a centrally sponsored scheme for developing every city of our country into Smart Cities in a decade.
- 2. It is an initiative to identify new digital technology innovations for solving the many problems faced by our country.
- 3. It is a programme aimed at making all the financial transactions in our country completely digital in a decade.

Select the correct answer using the code given below:

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

Correct answer: b

Q11. In the context of solving pollution problems, what is/are the advantage/advantages of bioremediation technique?

1. It is a technique for cleaning up pollution by enhancing the same biodegradation process that occurs in nature.
2. Any contaminant with heavy metals such as cadmium and lead can be readily and completely treated by bioremediation using microorganisms.
3. Genetic engineering can be used to create microorganisms specifically designed for bioremediation.

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

Correct answer: c

Q12. Due to some reasons, if there is a huge fall in the population of species of butterflies, what could be its likely consequence/consequences?

1. Pollination of some plants could be adversely affected.
2. There could be a drastic increase in the fungal infections of some cultivated plants.
3. It could lead to a fall in the population of some species of wasps, spiders and birds.

Select the correct using the code given below:

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

Correct answer: c

Q13. It is possible to produce algae based biofuels, but what is/are the likely limitation(s) of developing countries in promoting this industry?

1. Production of algae based biofuels is possible in seas only and not on continents.
2. Setting up and engineering the algae based biofuels production requires a high level of expertise/ technology until the construction is complete.
3. Economically viable production necessitates the setting up of large scale facilities which may raise ecological and social concerns.

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

Correct answer: b

2016

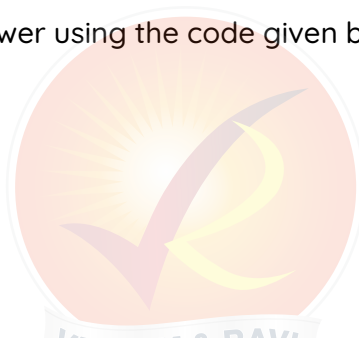
Q1. With reference to 'LiFi', recently in the news, which of the following statements is/are correct?

- 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

Correct answer: c



Q2. 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

Correct answer: b

Q3. With reference to prepackaged items in India, it is mandatory to the manufacturer to put which of the following information on the main label, as per the Food Safety and Standards (Packaging and Labelling) Regulations, 2011?

- 1. List of ingredients including additives
- 2. Nutrition information
- 3. Recommendation, if any, made by the medical profession about the possibility of any allergic reactions
- 4. Vegetarian/non vegetarian

Select the correct answer using the code given below:

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

Correct answer: c

Q4. '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

Correct answer: b

Q5. 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

Correct answer: c

Q6. What is 'Greased Lightning10 (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

Correct answer: a

Q7. Which of the following statements is/are correct?

Viruses can infect

- 1. bacteria
- 2. fungi
- 3. plants

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

Correct answer: d

Q8. 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 attains 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

Correct answer: b

Q9. 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

Correct answer: c

Q10. 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 1650 km 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

Correct answer: d

Q11. 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?

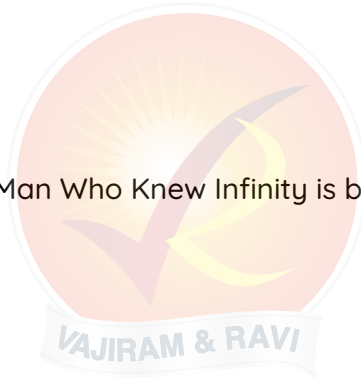
- a) 1 only
- b) 2 and 3 only
- c) 1 and 3 only
- d) 1, 2 and 3

Correct answer: c

Q12. 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

Correct answer: a



2015

Q1. 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 institutions in collaboration with highly advanced foreign scientific institutions.

Select the correct answer using the codes given below.

- a) 1 only

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

Correct answer: a

Q2. 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 kilometre of ice.
2. It is a powerful telescope to search for dark matter.
3. It is buried deep in the ice.

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

Correct answer: d

Q3. With reference to 'Near Field Communication (NFC) Technology', which of the following statements is/are correct?

1. It is a contactless communication technology that 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

Correct answer: c

Q4. The term 'Goldilocks Zone' is often seen in the news in the context of

- a) the limits of habitable zone above the surface of the Earth
- b) region inside the Earth where shale gas is available
- c) search for the Earth-like planets in outer space

d) search for meteorites containing precious metals

Correct answer: c

Q5. 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

Correct answer: a



Q6. 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

Correct answer: d

Q7. H1N1 virus is sometimes mentioned in the news with reference to which one of the following diseases?

- a) AIDS
- b) Bird flu
- c) Dengue
- d) Swine flu

Correct answer: d

Q8. With reference to 'fuel cells' in which hydrogen-rich fuel and oxygen are used to generate electricity, consider the following statements:

1. If pure hydrogen is used as a fuel, the fuel cell emits heat and water as by-products.
2. Fuel cells can be used for powering buildings and not for small devices like laptop computers.
3. Fuel cells produce electricity in the form of Alternating Current (AC).

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

Correct answer: a



Q1. Consider the following diseases:

1. Diphtheria
2. Chickenpox
3. Smallpox

Which of the above diseases has/have been eradicated in India?

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

Correct answer: b

Q2. Lichens, which are capable of initiating ecological succession even on a bare rock, are actually a symbiotic association of

- a) algae and bacteria
- b) algae and fungi
- c) bacteria and fungi
- d) fungi and mosses

Correct answer: b

Q3. 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-tonne 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

Correct answer: a

Q4. Which of the following pairs is/are correctly matched?

No.	Spacecraft	Purpose
1.	Cassini-Huygens	: Orbiting Venus and transmitting data to the Earth
2.	Messenger	: Mapping and investigating
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

Correct answer: b

Q5. Which of the following is/are the example/examples of chemical change?

1. Crystallization of sodium chloride
2. Melting of ice
3. Souring of milk

Select the correct answer using the code given below:

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

Correct answer: b

Q6. Consider the following pairs:

No.	Vitamin Deficiency	Disease
1.	Vitamin C	: Scurvy
2.	Vitamin D	: Rickets
3.	Vitamin E	: Night blindness

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

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

Correct answer: a

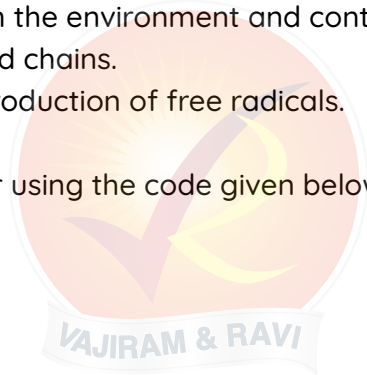
Q7. There is some concern regarding the nanoparticles of some chemical elements that are used by the industry in the manufacture of various products. Why?

- 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

Correct answer: d



2013

Q1. 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 only
- (c) 1 and 3 only

(d) 1, 2 and 3

Q2. Consider the following minerals

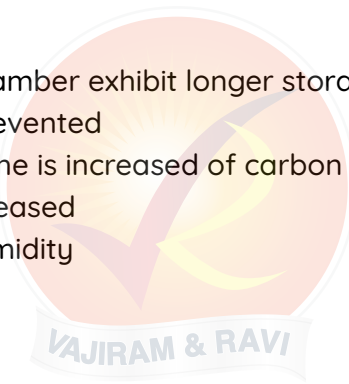
1. Calcium
2. Iron
3. Sodium

Which of the minerals given above is/are required by human body for the contraction of muscles?

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

Q3. Fruits stored in a cold chamber exhibit longer storage life because

- (a) exposure to sunlight is prevented
- (b) concentration dioxide in the is increased of carbon environment
- (c) rate of respiration is decreased
- (d) there is an increase in humidity



Q4. Ball bearings are used in bicycles, cars, etc., because

- (a) the actual between the is increased area of contact wheel and axle
- (b) the effective between the is increased area of contact wheel and axle
- (c) the effective between the is reduced area of contact wheel and axle
- (d) None of the above statements is correct

Q5. Consider the following phenomena:

1. Size of the sun at dusk
2. Colour of the sun at dawn
3. Moon being visible at dawn
4. Twinkle of stars in the sky
5. Polestar being visible in the sky

Which of the above are optical illusions?

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

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

Q6. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomena are responsible for this?

- 1. Dispersion
- 2. Refraction
- 3. Internal reflection

Select the correct answer using the codes given below.

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

Q7. Many transplanted seedlings do not grow because

- (a) the new soil does not contain favourable minerals
- (b) most of the root hairs grip the new soil too hard
- (c) most of the root hairs are lost during transplantation
- (d) leaves get damaged during transplantation

Correct answer:

Q8. Which of the following statements is / are correct?

- 1. Viruses lack enzymes necessary for the generation of energy.
- 2. Viruses can be cultured in any synthetic medium.
- 3. Viruses are transmitted from one organism to another by biological vectors only.

Select the correct answer using the codes given below.

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

Q9. The known forces of nature can be divided into four classes, viz, gravity, electromagnetism, weak nuclear force and strong nuclear force. With reference to them, which one of the following statements is not correct?

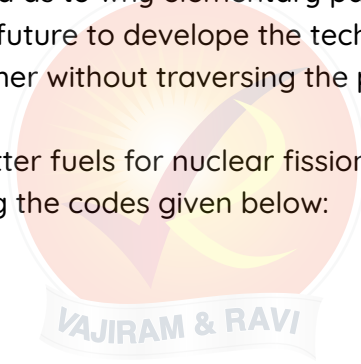
- (a) Gravity is the strongest of the four
- (b) Electromagnetism acts only on particles with an electric charge
- (c) Weak nuclear force causes radioactivity
- (d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom.

Q10. The efforts to detect the existence of Higgs boson particle have become frequent news in the recent past. What is /are the importance/importances of discovering this particle?

1. It will enable us to understand as to why elementary particles have mass.
2. It will enable us in the near future to develop the technology to transferring matter from one point to another without traversing the physical space between them.
3. It will enable us to create better fuels for nuclear fission.

Select the correct answer using the codes given below:

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



Q11. 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 only
 - (c) 1 and 3 only
 - (d) 1, 2 and 3
-