

TEST : Gen Science/Science n Technology Solutions : 50
Multiple choice Questions (MCQ's)

Ques 1: Consider the following statements:

1. The Earth's magnetic field has reversed every few hundred thousand years.
2. When the Earth was created more than 4000 million years ago, there was 54% oxygen and no carbon dioxide.
3. When living organisms originated, they modified the early atmosphere of the Earth.

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

Answer: a

Explanation: 1: A change in the Earth's magnetic field resulting in the magnetic north being aligned with the geographic south, and the magnetic south being aligned with the geographic north is called a geomagnetic reversal. Complete magnetic reversals have happened every 200,000 to 300,000 years over the past 20 million years. But that regularity hasn't continued, as the last known reversal occurred roughly 780,000 years ago.

2: Between 4.5 and 2.5 billion years (the Archaean and Proterozoic time), the earliest atmosphere contained carbon dioxide (CO₂), methane (CH₄), water vapor (H₂O), carbon monoxide (CO), a little nitrogen (N), and hydrogen (H).

3: When living organisms originated, they did not affect the early atmosphere because they lacked the ability to do so. The early atmosphere of the earth was modified by solar winds. This happened not only in the case of the earth but also in all the terrestrial planets, which were supposed to have lost their primordial atmosphere through the impact of solar winds

Q.2 – 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

Option (c) is correct:

Statement 1 is correct: Common probiotic bacteria can include Lactobacillus and Bifidobacterium. The most common yeast found in probiotics is Saccharomyces boulardii. Probiotics are defined as living bacteria that, when administered in adequate amounts, confer a health benefit on the host.

Statement 2 is incorrect: Probiotics occur naturally in fermented foods and cultured milk, but we can also find manufactured probiotic supplements.

Statement 3 is correct: Recent studies suggest that probiotics in yogurt drinks and non-dairy probiotic supplements could help aid the digestion of lactose (milk sugar).

Ques 3: 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

Answer: a

Explanation: Singularity and event horizons are related to Black Holes. The standard model of physics tries to explain universal phenomena. String theory is used in the context of quantum physics that is used to understand quantum phenomena

Ques 4: 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?

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

Answer: d

Explanation: IceCube is a particle detector at the South Pole that records the interactions of a nearly massless subatomic particle called the neutrino. IceCube searches for neutrinos from the most violent astrophysical sources: events like exploding stars, gamma-ray bursts, and cataclysmic phenomena involving black holes and neutron stars.

The IceCube telescope is a powerful tool to search for dark matter and could reveal the physical processes associated with the enigmatic origin of the highest energy particles in nature. In addition, exploring the background of neutrinos produced in the atmosphere, IceCube studies the neutrinos themselves; their energies far exceed those produced by accelerator beams. IceCube is the world's largest neutrino detector, encompassing a cubic kilometer of ice. It is buried beneath the surface, extending to a depth of about 2,500 meters. Burying it deep in ice is important to enhance the precision of the detector.

Ques 5: 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

Answer: a



Explanation: Singularity and event horizons are related to Black Holes. The standard model of physics tries to explain universal phenomena. String theory is used in the context of quantum physics that is used to understand quantum phenomena.

Ques 6– 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

Option (d) is correct:

Statement 1 is not correct: Nature itself is an excellent nanotechnologist. It provides us with a range of fine particles, from inorganic ash, soot, sulfur and mineral particles found in the air or in wells, to sulfur and selenium nanoparticles produced by many bacteria and yeasts. These nanomaterials are entirely natural.

Statement 2 is correct: Among metal and metal oxide nanoparticles (NPs) potentially present in cosmetics, those containing titanium dioxide and zinc oxide are common ingredients added to obtain a sufficient sun protection.

Statement 3 is correct: The nanoparticle may be unsafe: Due to their immensely small size, these materials may exhibit different physical, chemical, and biological properties, and penetrate cells more easily.

Ques 7. 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



Option (d) is correct:

Q.8 – 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

Option (d) is correct:

DNA barcoding is a method of identifying biological specimens and distinguish among species that look alike. It involves sequencing of stretches of genomic region which evolves fast enough to allow species-level discrimination.

Statement 1 is incorrect: To measure the age of plant and animal remains from the more recent past, scientists use a radioactive isotope of carbon, called carbon-14, as their clock.

Statements 2 and 3 are correct: DNA Barcoding can be used to distinguish among species that look alike and identify undesirable animal or plant materials in processed foods. DNA barcoding in plants not only speeds up writing the encyclopedia of life, but also opens up the possibility of establishing Digital Plant Identification System (DPIS) which works independent of type, age, or developmental stage of the sample under study. Hence, if used properly, DNA barcoding can be an effective and efficient tool for exploring and protecting biodiversity, expedite bioprospecting, and defending against bio-piracy.

Ques 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 Band C viruses do not show the symptoms for many years.

Answer: b

Explanation: The hepatitis B vaccine is a safe and effective vaccine that is recommended for all infants at birth and for children up to 18 years. The hepatitis B vaccine is also known as the first “anti-cancer” vaccine because it prevents hepatitis B, the leading cause of liver cancer worldwide

Ques 10: In the context of proposals to the use of hydrogen-enriched CNG (H-CNG) as fuel for buses in public transport, consider the following statements:

1. The main advantage of the use of H-CNG is the elimination of carbon monoxide emissions.
2. H-CNG as a fuel reduces carbon dioxide and hydrocarbon emissions.



3. Hydrogen up to one-fifth by volume can be blended with CNG as fuel for buses.
4. H-CNG makes the fuel less expensive than CNG.

Which of the statements given above is/are correct?

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

Answer: b

Explanation: hydrogen-enriched CNG (H-CNG) is a blend of hydrogen and CNG, the ideal hydrogen concentration being 18%. Hence, Statement 3 is correct.

Compared to conventional CNG, the use of H-CNG can reduce the emission of carbon monoxide up to 70%, not complete emission. Hence, statement 1 is not correct. It also reduces carbon dioxide and hydrocarbon emissions. Hence, statement 2 is correct.

H-CNG also enables up to 5% savings in fuel efficiency. H- CNG also reduces the engine's unburned hydrocarbon emissions and speed up the process of combustion.

Ques 11: Which one of the following statements best describes the role of B cells and T cells in the human body?

- (a) They protect the environmental allergens. body
- (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.

Ans d

Ques 12: . 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

Ans d

Ques 13: 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

Ans b



Ques 14: "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

Ans d

Ques 15: In the context of recent advances in 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

Ans d

Ques 16: 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

Ans b

Ques 17: . With reference to the carbon nanotubes, consider the following statement :

- (1) They can be used as the 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



Ans c

Ques 18: . 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

Ans c

Ques 19: '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 virtual 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

Ans a

Ques 20: 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

Ans D

Ques 21: What is cas9 protein that is often mentioned in the 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 generally modified crops

Ans A

Ques 22: Which 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.

Ans b

Ques 23: 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

Ans D

Ques 24: . 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 the 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 a smart-phone or PC.
- (4) VR closes the world, and transposes an individual, providing a 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

Ans B

Ques 25: Consider the following statements about a digital signature:

- (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 of server on the 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

Ans D

Ques 26: Consider the following statements:

- (1) The Earth's magnetic field has reversed every few hundred thousand years.
- (2) When the Earth was created more than 4000 million years ago, there was 60% oxygen and no carbon dioxide.
- (3) When living organisms originated, they modified the early atmosphere of the Earth.

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

Ans c

Ques 27: . 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

Ans c

Ques 28: . 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

Ans d

Ques 29. 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 defence system
- (d) To study the effect of solar flares on our communication systems

Ans b

Ques 30. 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

Ans d

Ques 31. 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

Ans c

Ques 32. 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

Ans B

Ques 33. 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

Ans d

Ques 34. 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

Ans D

Ques 35.With reference to 'fly ash' produced by the power plants using the coal as fuel, which of the following statements is/are correct?

- (1) Fly ash can be used in the production of bricks for building construction
- (2) Fly ash can be used as a replacement for some of the Portland cement contents of concrete
- (3) Fly ash is made up of silicon dioxide and calcium oxide only, and does not contain any toxic elements.

Select the correct answer using the code given below

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

Ans A

Ques 36.With reference to the use of nanotechnology in the 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

Ans C

Ques 37.. 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 only

Ans D



Ques 38.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

Ans C

Ques 39. Which of the following is/are the example/examples of chemical change? (2014)

- (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

Ans b

Ques 40. Consider the following pairs

Vitamin	Deficiency Disease
Vitamin C	Scurvy
Vitamin D	Ricket
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

Ans A

Ques 41. 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

Ans C

Ques 42. Many transplanted seedlings do not grow because

(a) the new soil does not contain favorable 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

Ans C

Ques 43. 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 Solution using the codes given below.

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Ans A

Ques 44. . Mycorrhizal biotechnology has been used in rehabilitating degraded sites because mycorrhiza enables the plants to (2013)

(1) Resist drought and increase absorptive area

(2) Tolerate extremes of PH

(3) Resist disease infestation

Select the correct Solution using the codes given below:

(a) 1 only



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

Ans D

Ques 45. Consider the following phenomena: (2013)

- (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

Ans C

Ques 46. . 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 Solution 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

Ans A

Ques 47. . 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 surface. speed and places a probe on its

Ans C

Ques 48. . 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

Ans B

6. Consider the following communication technologies:

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

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

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

(d) 1, 2 and 3

Ans d

Ques 49. . Which reference to Agni-IV Missile, which of the following statements is/are correct?
(2014)

- (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

Ans A

Ques 50. . 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

Ans D

