

1) Consider the following:

1. Weak nuclear force
2. Gravitational force
3. Electromagnetic force
4. Strong nuclear force

Which of the following is the correct ascending order of relative strengths of the above forces of nature?

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

2) With reference to the atomic clocks, consider the following statements:

1. These are used to measure the distance between two objects in space.
2. These use resonance frequencies of atoms to keep time with extreme accuracy.
3. These are used on-board GPS satellites that orbit the Earth.
4. These are radioactive as they rely on atomic decay.

Which of the statements given above are correct?

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

3) Which of the following phenomena can be attributed to the formation of a rainbow?

1. Refraction of sunlight
2. Reflection of sunlight
3. Dispersion of sunlight

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

4) With reference to Alternating Current (AC) and Direct Current (DC), consider the following statements:

1. Unlike DC, AC reverses its direction periodically.
2. In India, the frequency of AC is 100 Hz.
3. The current that flows in appliance running on batteries is DC.

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

5) Consider the following statements:

1. Microwaves are found at the higher frequency end of the radio spectrum.
2. Microwaves are employed in Doppler radars for air-traffic control.
3. Human body cannot detect infrared radiation in any form.
4. Cool and faint objects in the universe can be detected in the infrared.

Which of the statements given above are correct?

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

6) Which of the following are the applications of a concave mirror?

1. Shaving mirrors
2. Telescopes
3. Rear-view mirrors in vehicles

4. Street light reflectors
5. Production of heat in solar furnaces

Select the correct answer using the code given below:

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

7) With reference to the electric current, consider the following statements:

1. A stream of electrons moving through a conductor constitutes an electric current.
2. In liquids and gases, electric current is transported by ions and electrons.
3. Electrolysis can cause decomposition of matter.

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

8) Which of the following reasons accounts for the use of alloys rather than pure metals as the conductors in electric heating devices?

- (a) Pure metals are not easy to mould into shapes
- (b) Alloys cost less as compared to the pure metals
- (c) Pure metals have low tensile strength
- (d) Alloys do not oxidise readily at high temperatures

9) Which one of the following statements is correct with reference to 'Sonic Boom'?

- a) These are waves with a frequency of more than 20 kHz and cannot be heard by humans.
- b) These are sounds associated with the shockwaves when object travels in air faster than the speed of light.
- c) These are shock waves produced when the sound producing source moves with a speed higher than that of sound.

- d) These sounds are produced by rhinoceroses, whales and elephants for communication

10) With reference to the Doppler Effect, consider the following statements:

1. It works on both light and sound waves.
2. It can be used to measure the speed of moving vehicles.

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

11) Consider the following statements with reference to Communication Systems:

1. Noise refers to the loss of strength of a signal while propagating through a medium.
2. Attenuation is the process of increasing the strength of a signal using an electronic circuit.

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

12) Which one of the following statements best describes 'Baryonic Matter'?

- a) Heavily decomposed Particulate Matter
- b) Invisible matter with opposite electrical charges
- c) Matter released from failed stars
- d) Visible matter consisting of subatomic particles

13) Tungsten is almost exclusively used for filament of electric lamps mainly because:

- a) it is cheaper in cost compared to other substitutes
- b) it has high melting point and high resistivity
- c) it has a very low melting point and can avoid short circuit
- d) it has low resistance and a high melting point

- 14) Consider the following statements:
1. X-rays do not pass as through soft tissue such as organs and muscles.
 2. Both Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) Scan use ionizing radiations including x-rays.
 3. MRI scans produce more detailed images than CT scans.

Which of the statements given above are correct?

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

- 15) With reference to allotropes of carbon, consider the following statements:

1. Graphite is insoluble in water and has high melting point.
2. Q-Carbon exhibits high-temperature superconductivity.
3. Diamond is a good conductor of electricity but bad conductor of heat.

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

- 16) Consider the following statements:

1. Fermions are the particles that make up matter while bosons are the particles that carry forces.
2. Unlike bosons, an unlimited number of fermions can collect into same energy state at low temperature.
3. Fermions include electrons, protons and neutrons while bosons include photons and gluons.

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

- 17) Which of the following statements are correct regarding supercritical matter?

1. It is the state of matter that exists between the liquid and gaseous phases.
2. It does not have any definite shape or volume.
3. It is denser than solid substance.
4. It is not found in nature and is created artificially.

Select the correct answer using the code given below:

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

- 18) When an image looks different from the real one, it is called 'optical illusion'. Which of the following are examples of optical illusions?

1. Red colour of the halo around the sun
2. Moon being visible at dawn
3. Stick half immersed in water appears bent
4. Polestar being visible in the sky

Select the correct answer using the code given below:

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

- 19) Consider the following statements:

1. Acid reacts with active metals to yield hydrogen.
2. Acid tastes sour and changes blue litmus into red.
3. Base has a bitter taste and changes red litmus into blue.
4. Bases react with acids to produce salt and water.

Which of the statements given above are correct?

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

- 20) Consider the following statements:
1. Galvanisation is the process of applying zinc coating to iron in order to prevent rusting.
 2. Crystallisation is a method of purifying an impure compound by using solvents.

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

21) Consider the following statements with reference to Noble gases:

1. All inert gases are noble gases but all noble gases are not inert gases.
2. All noble gases are monoatomic in nature.

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

22) The terms 'Cisplatin' and 'Taxol' are mentioned in the context of:

- a) drugs for diseases like typhoid
- b) treatment of cervical cancer
- c) manufacturing of COVID-19 vaccine
- d) psychotropic substances

23) Which one of the following is the correct order of electromagnetic waves based on their increasing wavelengths?

- a) X-ray - Ultraviolet - Visible - Infrared
- b) Ultraviolet - Visible - X-ray - Infrared
- c) X-ray - Ultraviolet - Infrared - Visible
- d) Ultraviolet - X-Ray - Visible - Infrared

24) Consider the following pairs:

Term and Description

1. Avogadro Constant: Number of units in one mole of any substance
2. Rydberg Constant: Helps to describe wavelengths of light
3. Planck Constant: Defines the amount of energy that a photon can carry

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

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

25) Consider the following statements:

1. Atomic number is the total number of protons in the nucleus of the atom.
2. The number of electrons in all atoms is equal to the number of protons irrespective of their charge.
3. Isotopes are atoms of the same element having the same atomic number but different mass numbers.

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

26) It is a phenomenon in quantum mechanics where the particles are connected in such a way that one of the particles cannot be perfectly described without including all of the information about the other one. Which one of the following terms best reflects the above statement?

- a. Superposition
- b. Wave function
- c. Entanglement
- d. Symmetrisation

27) Which of the following are Rare Earth Elements (REEs)?

1. Lithium
2. Ytterbium

3. Samarium
4. Cerium
5. Yttrium
6. Nickel

Select the correct answer using the code given below:

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

28) Consider the following statements:

1. Rainwater, distilled water and demineralised water are soft water.
2. Permanent hardness of water can be removed by boiling the water.
3. Heavy water is prepared by exhaustive electrolysis of water.

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

29) With reference to “Quarks”, consider the following statement:

1. They are the fundamental constituents of matter.
2. Electrons are made up of quarks particles.
3. They are not observed independently but always in combination with other quarks.

Which of the statements given above is/are correct?

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

30) Potassium and Sodium are kept immersed in kerosene oil because they:

- a) get corroded easily in the presence of oxygen
- b) undergo a reduction reaction with the hydrogen present in the two mediums
- c) react vigorously with oxygen present in the water and air and catch fire
- d) occupy the last two positions in the reactivity series causing spontaneous a reaction

31) Which one of the following statements correctly describes the term “Isomerism”?

- a) More than one compound has the same chemical structures and same chemical formulae
- b) More than one compound has the same chemical structures but different chemical formulae
- c) More than one compound has different chemical structures and different chemical formulae
- d) More than one compound has the same chemical formulae but different chemical and physical properties

32) In an airplane, Ethylene Glycol is added to Aviation Turbine Fuel (ATF) because:

- a) it enhances anti-knocking properties of fuel
- b) it increases octane number of fuel
- c) it prevents the freezing of fuel
- d) it improves consumption efficiency of fuel

33) Consider the following statements:

- 1) Biosimilar drugs are created in living cells that are highly similar to a reference product.
- 2) Process used to develop generic medicines cannot be applied to the development of biosimilar medicines.
- 3) Biosimilars and generic drugs are versions of brand-name drugs used as affordable treatment options to patients.

Which of the statements given above is/are correct?

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

34) Consider the following statements:

- 1) Shale gas is a conventional hydrocarbon present in the permeable rock.
- 2) Guar gum plays a significant role in the extraction of shale gas.
- 3) India is the largest producer of Guar gum in the world.

Which of the statement given above is/are correct?

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

35) Which of the below pesticides are banned by the Government of India for its manufacture, import and use?

- 1) Aldrin
- 2) Endosulfan
- 3) Methyl Parathion
- 4) Caprolactam
- 5) Trifluralin
- 6) Factamfos

Choose the correct answer using the codes given below:

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

36) With reference to Raman effect, consider the following statements:

- 1) The Raman Effect is the very weak effect which deals with scattering of light by molecules of a medium when they are excited to different energy levels.
- 2) The Raman spectroscopy is used in identifying the illegal drugs without damaging the packaging materials.

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

37) With reference to the Lipids in Human Body, consider the following statements:

- 1) Pancreas secretes lipase enzyme which converts fat into fatty acid.
- 2) Saturated fat consists of a double bond between carbon.
- 3) Very low-density lipoprotein (VLDL) that is

produced in the liver is a major cause of heart attack in human beings.

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

38) Consider the following statements with respect to Lagrange points(L-points) which is recently seen in news :

- 1) At Lagrange points, the gravitational pull of two large masses precisely equals the centripetal force required for a small object to move with them.
- 2) Lagrange points in space can be used by spacecraft to reduce fuel consumption.
- 3) The James Webb space telescope (JWST) will orbit the sun, a million miles away from Earth at the third Lagrange point.

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

39) "Horizon scanning" recently seen in media related to :

- (a) It is a technique used in diagnosis of cancer cells in the human body.
- (b) It is the early detection and assessment of emerging technologies or threats that helps policy decisions.
- (c) It is a global network of synchronized radio observatories that work in unison to observe radio sources associated with black holes.
- (d) It involves scanning the soil surface to identify physical, chemical and biological characteristics of soil.

40) With reference to Indian Navy's Information Fusion Centre-Indian Ocean Region (IFC-IOR), consider the following statements:

- 1) It was set up in 2018 to coordinate with

- regional countries on maritime issues and act as a regional repository of maritime data.
- 2) The centre was established as part of the government's SAGAR (Security and Growth for All in the Region) framework for maritime co-operation in the Indian Ocean region.
 - 3) It is located in Chennai, Tamil Nadu.
 - 4) The centre also publishes the monthly weather forecasts and weather warnings report.

Consider the above statements and choose the correct statements:

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

41) Consider the following statements:

- 1) Nano urea is a patented, indigenously made nitrogenous fertilizer developed by the Indian Council of Agriculture Research.
- 2) Urea has the highest nitrogen content of all solid nitrogenous fertilizers in common use.
- 3) Globally, India is the second biggest consumer of Urea.

Which of the statements given above is/are correct?

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

42) Consider the following statements, with reference to Human Immune system:

- 1) When our body encounters a pathogen for the first time, it produces anamnestic immune response.
- 2) T-lymphocytes produce antibodies into our blood to fight with pathogens, while B-lymphocytes help T- cells to produce them.
- 3) Hydrochloric Acid (HCL) produced in stomach is an example for innate immune response.

Which of the statements given above is/are correct?

- a) 1 only

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

43) With reference to Green Chemistry, consider the following statements :

- 1) *Pseudomonas putida* is used in bioremediation of oil spills.
- 2) H₂O₂ is used as antiseptic, disinfectant and in rocketry as a propellant.

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

44) With reference to GM crops in India, consider the following statements:

- 1) Bt cotton is the only genetically modified (GM) cash crop that has been approved for commercial cultivation.
- 2) Cry1Ac protein is present in Bt cotton as well as Bt Brinjal development.
- 3) All gene edited products are classified as transgenic products.

Which of the statements given above is/are correct ?

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

45) Consider the following statements in respect to Li-Fe battery :

- 1) It cannot be recharged in partially discharged conditions.
- 2) Repeated partial discharge in Li-Fe batteries can cause a battery to 'remember' a lower capacity.
- 3) It uses organic compounds as an electrolyte.
- 4) Solid-state batteries offer higher safety than Li-ion electrolyte batteries.

Which of the statements given above is/are correct ?

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

d) 1, 2 and 3

46) Consider the following statements:

- 1) Cassini-Huygens Mission has found that Titan has both methane and ethane.
- 2) Methane is a chemical compound with simplest alkene group, which is a main constituent of natural gas.

Which of the statements given above is/are **not** correct?

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

47) Consider the following statements :

- 1) BCG vaccine has a protective effect against meningitis and disseminated TB in children.
- 2) BCG vaccine is not included in India's universal immunisation programme.
- 3) Extensively drug-resistant tuberculosis (XDR-TB) in HIV patients leads to high mortality.

Which of the statements given above is/are correct?

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

48) Consider the following statements:

- 1) Speed of the sound in air increases with increase in temperature.
- 2) When a sound wave travels from one medium to another medium, the frequency remains constant.
- 3) Sound travels faster in hydrogen medium compared to air medium.

Which of the statements given above is/are correct?

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

49) Consider the following statements:

- 1) Gravity is always attractive while electromagnetic force is always repulsive.
- 2) The gravitational force is the force of mutual attraction between any two objects by virtue of their masses.
- 3) Electromagnetic force can act over large distances without any medium and is enormously strong compared to gravity.
- 4) Neutrinos experience strong electromagnetic force.

Which of the statements given above are correct?

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

50) With reference to Higgs Boson particle recently seen in media, consider the following statements:

- 1) All matter particles acquire mass only in contact with Higgs field.
- 2) If the Higgs field disappeared suddenly, all matter would collapse due to dispersion of massless electrons at the speed of light.
- 3) Bose-Einstein Condensate is the fifth state of matter formed when elements are superheated.

Which of the statements given above is/are correct?

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

51) Consider the following statements in respect of a Scramjet Engine and Sounding Rockets:

- 1) A scramjet engine efficiently operates at hypersonic speeds and allows supersonic combustion.
- 2) Sounding rockets developed by ISRO are one or two stage gas propellant rockets used for probing upper atmospheric regions and for space research.
- 3) BrahMos is a ramjet supersonic cruise missile which is capable of being launched from land, sea and air.

Which of the statements given above is/are correct?

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

52) With reference to Green Manure, consider the following statements :

- 1) These are crops grown specifically for maintaining soil fertility and structure.
- 2) Glyricidia, Pongamia and Subabul are used as Green Manure.
- 3) Green manure usage will subsequently reduce the consumption of Chemical fertilizers in India.

Which of the statements given above is/are correct ?

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

53) Consider the following statements:

- 1) Dark matter attracts and holds the galaxies together but the dark energy repels and causes expansion of the universe.
- 2) HAGAR, MACE and Astrosat observatories by India are designed to study Dark Matter and Dark Energy.
- 3) Around 95 percent of the universe is made up of "unknown dark matter and dark energy".

Which of the statements given above is/are **not** correct?

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

54) With reference to Bisphenol A (BPA), consider the following statements:

- 1. It is a colourless crystalline solid insoluble in organic solvents.
- 2. It is used to manufacture polycarbonate plastics and resins.

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

55) Consider the following statements about Biomolecules :

- 1) Carbohydrates are linear chains connected by peptide bonds
- 2) Insulin in human body is a fibrous protein
- 3) Triglycerides is a type of fat found in butter

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

56) Which of the following constitute(s) defence mechanisms in the Human Body ?

- 1) Immunity to defend the body from infections.
- 2) Stoppage of bleeding (Haemostasis) to prevent blood loss.
- 3) Resistance to stress mainly through release of hormones.

Select the correct answer using the code given below:

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

57) Consider the following statements regarding Antimicrobial resistance :

- 1) Antibiotic resistance does not occur naturally, but misuse of antibiotics in humans and animal feed is the main cause.
- 2) Antibiotic Resistance in Bacteria occurs when the changes in bacteria cause the drugs used to treat the infection to become less effective.
- 3) The usage of Colistin in poultries is banned in India.

Which of the statements given above is/are correct?

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

(d) 1, 2 and 3

58) With reference to Human Papillomavirus (HPV), consider the following statement:

- 1) It is a single-stranded Ribonucleic acid that affects human beings.
- 2) Cervical cancer is primarily caused due to HPV.
- 3) Gardasil is an indigenously developed HPV vaccine in India.

Which of the statements given above are correct?

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

59) With reference to Plant and Animal cells, consider the following statement:

- 1) Centriole is present in the animal cell but generally absent in plant cell.
- 2) Carbohydrates are stored in the animal in form of starch and plants in the form of glycogen.

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

60) With reference to the Nuclear Power plant, consider the following statements:

- 1) Light water reactor uses normal water as a moderator.
- 2) Graphite is used as a coolant and moderator in the Pressurised heavy water reactor.
- 3) Fast breeder Reactors can operate without moderators.

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

61) With reference to the Ribose Nucleic Acid (RNA) consider the following statements :

- 1) In the cell of a human being RNA is present in mitochondria and the nucleus of the cell.
- 2) t-RNA carries information in the form of codes from DNA towards ribosomes for protein synthesis.

Which of the statements given above is/are **not** correct?

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

62) Recently Proton therapy is invented by researchers. It is a more efficient cancer treatment in the world. Consider the following statements related to proton therapy :

- 1) Proton therapy uses x-rays to treat cancer.
- 2) Cyclotron is used for generating high-power energy radiation in proton therapy.
- 3) Proton therapy has less chance of damaging other healthy tissue surrounding malignant tumours.

Which of the statements given above is/are correct ?

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

63) Consider the following statements:

- 1) Pure water is a good conductor of electricity.
- 2) Water is amphoteric in nature.
- 3) Water contracts on heating between 0 °C and 4 °C.

Which of the statements given above is/are correct?

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

64) With reference to the Fortification of Food, consider the following statements :

- 1) Fortification guidelines are given by the Food Safety and Standard Authority of India.
- 2) According to the rules given by the FSSAI, milk packed in the pouch should be mandatorily fortified with Vitamin A and D.

- 3) Golden Rice produced through genetic fortification requires greater changes in management practices during cultivation.

Which of the statements given above is/are correct ?

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

65) Consider the following statements with reference to the Sunspots :

- 1) Increase in the number of Sunspot cause an increase in the area geo-tail than the normal sunspot activity.
- 2) If the number of Sunspots increases on the sun, then decrease in the temperature of the corona of the sun.
- 3) Sunspots are the regions with higher magnetic pressure.

Which of the statements given above is/are correct ?

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

66) Which of the following are radioactive elements?

- 1. Hassium
- 2. Promethium
- 3. Technetium
- 4. Zirconium
- 5. Nobelium

Select the correct answer using the code given below:

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

67) With reference to the Producer gas consider the following statements:

- 1) Producer gas is a colorless gas that mainly consists of Methane and hydrogen.
- 2) Producer gas is generated by burning coal or coke without the presence of oxygen
- 3) Mostly used as fuel in the iron and steel

manufacturing industries.

Which of the statements given above is/are correct ?

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

68) Consider the following statements regarding Stem cells :

- 1) Stem cells are special cells that can make copies of themselves and change into many different kinds of cells.
- 2) Stem cells in umbilical cord blood transplant can completely cure HIV patients.

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

69) With reference to the Immune system of the Human body, consider the following statements:

- 1) WBCs are biconvex and nucleated cells in the blood.
- 2) WBCs have a longer life span than red blood cells.
- 3) Monocytes are primarily associated with Hyper-sensitivity reactions in Human Body.

Which of the statements given above is/are **not** correct?

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

70) Consider the following statements regarding International Liquid Mirror Telescope (ILTM) :

- 1) The ILTM is a Space Telescope placed at Lagrangian Point 2 which is 1.5 mn km away from earth.
- 2) In ILTM, Mercury is used as the reflective liquid which is protected from wind by a thin transparent film of mylar.
- 3) They cannot be turned and pointed in any direction.

Which of the statements given above is/are correct?

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

71) Which of the following are related to the process of photosynthesis?

- 1) Absorption of light energy by chlorophyll.
- 2) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen.
- 3) Reduction of carbon dioxide to carbohydrates.

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**

72) Consider the following pairs:

Vitamins/Minerals Deficiency Diseases

- 1. Vitamin A : Night blindness
- 2. Vitamin D : Scurvy
- 3. Iron : Anaemia
- 4. Iodine : Goitre

How many pairs given above are correctly matched?

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

73) With reference to enzyme-linked immunosorbent assay (ELISA), consider the following statements:

- 1) Performing an ELISA involves at least one antibody with specificity for a particular antigen.
- 2) It can be used to detect Covid antibodies that the body develops in response to infection by the SARS-CoV-2 virus.

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

74) Arrange the following particles in increasing order of size.

- 1) Atoms
- 2) Quarks
- 3) Hadrons

Select the correct answer using the code given below.

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

75) Which of the following are used as indicators for testing acids?

- 1) Litmus paper
- 2) Turmeric
- 3) Methyl orange
- 4) Vanilla extract

Select the correct answer using the code given below.

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

76) Which of the following is/are the example/examples of exothermic reactions?

- 1) Snow formation in clouds
- 2) Conversion of water into steam
- 3) Rusting of iron

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

77) Consider the following statements regarding Viruses:

- 1) All viruses contains both RNA and DNA.
- 2) Bacteriophages (viruses that infect the bacteria) are usually single-stranded DNA viruses

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

78) Which of the following are micronutrients in plant nutrition?

- 1) Iron
- 2) Potassium
- 3) Copper
- 4) Zinc
- 5) Magnesium

Select the correct answer using the code given below.

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

79) Consider the following pairs:

Part of Eye	Function
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1. Cornea: Refraction of light entering the eye
2. Pupil: Regulates and controls amount of light entering the eye\
3. Retina: Image Formation

Which of the pairs given above are correctly matched?

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

80) Consider the following pairs:

Mode of reproduction	Example
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- 1) Vegetative propagation : Ginger
- 2) Pollination : Tomato
- 3) Fragmentation : Yeast

Which of the pairs given above are correctly matched?

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

81) With reference to plant transportation system, consider the following statements:

- 1) Phloem moves water and minerals obtained from the soil to the leaves.
- 2) Xylem transports products of photosynthesis from the leaves to other parts of the plants.
- 3) Transpiration involves loss of water vapour through the stomata of plants.

Which of the statements given above is/are **not** correct?

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

82) With reference to 3D Printing and 4D printing, consider the following statements:

- 1) In 3D Printing there is a repetition of the 2D structure layer by layer from the bottom to the top.
- 2) 4D printing provides printed objects with the ability to change form or function with time.

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

- 83) With reference to the magellanic clouds, consider the following statements:
- 1) They are visible to the unaided eye in the southern hemisphere.
 - 2) They are part of the Milky way galaxy.
 - 3) They serve as laboratories for the study of active stellar formation and evolution.

Which of the statements given above is/are correct?

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

- 84) We feel burning pain when stung by Ant.
Which of the following acid is responsible for the burning pain?

- (a) Methanoic Acid
- (b) Acetic Acid
- (c) Oxalic Acid
- (d) Tartaric Acid

- 85) "Sorbitol" has applications in which of the following?

- 1) used as a sugar substitute in confectionaries
- 2) used as a natural anti-diarrheal
- 3) used in the preparation of synthetic Vitamin-C
- 4) used as an ingredient in toothpaste

Select the correct answer using the code given below.

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

- 86) Which of the following fields do nuclear radiations have applications in?

- 1) Agriculture
- 2) Medical diagnostics
- 3) Oil drilling

- 4) Treatment of cancer
- 5) In the measurement of the movement of pollutants

Select the correct answer using the code given below.

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

- 87) With reference to battery energy storage, how do sodium-ion batteries differ from lithium-ion batteries?

- 1) Sodium-ion batteries have lower energy density than lithium-ion batteries.
- 2) In cold environments, sodium-ion batteries are less efficient as compared to lithium-ion batteries.
- 3) The abundance of raw materials required to make sodium-ion batteries makes them cheaper compared to their lithium counterparts.

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

- 88) With reference to the coagulation of blood in human beings, consider the following statements:

- 1) Haemostasis leads to cessation of bleeding from a blood vessel which is the first stage of wound healing.
- 2) Haemophilia is a genetic disorder in which the blood does not clot properly.

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

- 89) With reference to the domestic electric circuit, consider the following statements:
- 1) The earth wire is used as a safety measure for appliances that have a metallic body.
 - 2) The potential difference between the live wire and neutral wire in our country is 220 V.
 - 3) In our homes, electrical devices are always connected in series.

Which of the statements given above is/are correct?

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

- 90) This type of connective tissue is very elastic and has considerable strength. Two bones can be connected to each other by this type of connective tissue. They help to hold things in place in the body.

Which of the following connective tissue is being described in the passage?

- (a) Tendon
- (b) Ligament
- (c) Cartilage
- (d) Areolar tissue

- 91) Consider the following statements with reference to nuclear fission:
- 1) Nuclear fission produces more waste than nuclear fusion.
 - 2) Atom bomb works on the principle of nuclear fission.
 - 3) The energy released in nuclear fission reactions is millions of times greater than the energy released in chemical reactions.

Which of the statements given above is/are correct?

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

- 92) Which of the following can **not** be a blood group of progeny born to parents having A and AB blood groups?

- 1) A
- 2) AB
- 3) O

Select the correct answer using the code given below.

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

- 93) With reference to spoofing and phishing, consider the following statements:

- 1) Spoofing is an identity theft where a person is trying to use the identity of a legitimate user.
- 2) Phishing is where a person steals the sensitive information of users like bank account details.

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

- 94) With reference to the Big Bang Theory, which of the following statements is **not** correct?

- (a) According to this theory, all matter forming the universe existed in one place.
- (b) During the process, energy was converted into matter.
- (c) Temperature of the universe increased with the expansion of universe.
- (d) According to the theory, the universe continues to expand to the present day.

- 95) Colloidal solutions are mixtures in which microscopically dispersed insoluble particles of one substance are suspended in another substance. Which of the following are examples

of colloidal solutions?

- 1) Cow milk
- 2) Milk of magnesia
- 3) Blood
- 4) Tincture of iodine
- 5) Shaving cream

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

96) Which of the following actions involves Newton's third law of motion?

- 1) Launching of a rocket
- 2) Swimming
- 3) Firing of a gun

Select the correct answer using the code given below.

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

97) Ernest Rutherford designed an experiment where fast-moving alpha (α)-particles were made to fall on a thin gold foil. Rutherford's gold foil experiment is associated with

- (a) The discovery of electron
- (b) The discovery of proton
- (c) The discovery of neutron
- (d) The nuclear model of atom

98) With reference to industrially-produced artificial trans-fats, consider the following statements:

- 1) They raise Low Density Lipoprotein (LDL) Cholesterol and lowers High Density Lipoprotein (HDL) Cholesterol.
- 2) WHO launches the REPLACE campaign to eliminate trans fats from global food supply

by 2023.

- 3) Tamil Nadu became the first state in India to introduce fat tax on junk food.

Which of the statements given above is/are **not** correct?

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

99) Consider the following statements with reference to Autonomic Nervous System:

- 1) The parasympathetic nervous system deals with emergencies when the action must be quick and powerful.
- 2) The sympathetic division is mainly concerned with monitoring the routine functions of the body.

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

100) With reference to the melting of ice, which of the following statements is **not** correct?

- (a) Melting of ice is a physical change.
- (b) When ice melts, its volume decreases.
- (c) Melting of ice is an exothermic reaction.
- (d) When ice melts, its mass remains unchanged.