

1. Consider the following statements:
1. There is no variation in the shape and size of the cells in various parts of human body
 2. All animal cells have three major functional regions – plasma membrane, nucleus and cytoplasm
 3. Plasma membrane is the outer covering of each animal cell, which separates its contents from the surrounding medium
 4. Cell membrane is made up of lipids and protein and provides a mechanical barrier for the protection of the inner cell contents
 5. The plants cells have a rigid cell wall that lies outside the plasma membrane
- Which of the above statements is/are not correct?
- a) 1 only b) 1 and 5 only
 c) 2 and 4 only d) All the above

2. Consider the following statements:
1. Cytoplasm is a plant cell largely consists of smaller vacuole as compared to the animal cells
 2. Plastids are very common in the animal cells
 3. In addition to the plasma membrane, the animal cells are surrounded by a thick cell wall
 4. Animal cells are usually larger in size than the plant cells
- The correct statements are:
- a) 1, 2 and 3 only b) 1, 2 and 4 only
 c) None of the above d) All the above

3. Match List-I (*Food material*) with List-II (*Adulterant*) and give answer using the code given below:
- | | |
|---------------|-------------------|
| List-I | List-II |
| A. Dal | 1. Grit |
| B. Cereals | 2. Metanil yellow |
| C. Mustard | 3. Lead chromate |
| D. Haldi | 4. Argemone |

- Code:**
- | | | | | |
|----|---|---|---|---|
| | A | B | C | D |
| a) | 2 | 1 | 3 | 4 |
| b) | 1 | 2 | 3 | 4 |
| c) | 2 | 1 | 4 | 3 |
| d) | 1 | 2 | 4 | 3 |

4. Consider the following statements:
1. Filter candle usually remove the virus found in drinking water but not bacteria
 2. Practice of storing water in earthen vessels with camphor or ocimum leaves reduces the microbial population due to the eugenol content and oxygenated monoterpenes
 3. Chlorine kills pathogenic bacteria but it has no effect on spores and certain viruses like polio-viral hepatitis and jaundice
 4. Ozone has a strong virucidal effect
- The correct statements are:
- a) 1 and 2 only b) 2 and 3 only
 c) 3 and 4 only d) 1 and 4 only

5. Consider the following statements:
1. Some organism use simple food material obtained from organic sources in the form of oxygen and minerals, these organisms are called autotrophs
 2. The autotrophs include green plants and some bacteria
 3. The autotrophs survival depends directly or indirectly on heterotrophs
 4. Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis
- The correct statements are:
- a) 1 and 2 only b) 2 and 3 only
 c) 3 and 4 only d) 2 and 4 only

6. Consider the following statements:
1. The opening and closing of the pore in a plant cell is a function of the guard cells

2. The guard cells shrink when the water flows into them, causing the stomatal pore to open
3. Amoeba takes in food using temporary finger-like extensions of the cell surface which fuse over the food particle forming a food-vacuole
4. In paramecium, a unicellular organism, the cell has a definite shape and food is taken in at a specific spot

The correct statements are:

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

7. Consider the following statements:

1. Pepsin is a protein digesting enzyme rich in hydrochloric acid
2. The mucus protects the inner lining of the stomach from the action of the acid under normal conditions
3. Meat is easier to digest, hence carnivorous like tiger have a shorter small intestine
4. Large intestine is the site of the complete digestion of carbohydrates, proteins and fats

Which of the above statement(s) is/are correct?

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

8. Consider the following statements:

1. The heart has different chambers to prevent the oxygen-rich blood from mixing with the blood containing carbon dioxide
2. Amphibians and reptile have three-chambered hearts
3. Fishes have only one chamber to their hearts, and the blood is pumped to the gills, is oxygenated there, and paves directly to the rest of the body
4. Blood goes only once through the heart in the fish during one cycle of passage through the body. On the other hand, it goes through the heart twice during each cycle in other vertebrates

The correct statements are:

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

9. Consider the following statements:

1. An artificial kidney is a device to remove nitrogenous waste products from the blood through dialysis
2. Hemodialysis contain a number of tubes with a semi-permeable lining, suspended in a tank filled with dialysing fluid
3. Dialysing fluid in an artificial kidney has more osmotic pressure as blood, except that it is devoid of nitrogenous wastes
4. Nephrons in kidney are filtration units in the kidney

The correct statements are :

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

10. Consider the following statements regarding Endoplasmic Reticulum (ER) :

1. The ERs are of two types i.e. Rough ER (RER) and Smooth ER (SER)
2. The RER helps in the manufacturing of fat and lipids and some of them help in building the cell membrane, which is called as membrane biogenesis.
3. SER plays a crucial role in detoxifying many poisons and drugs

Which of the above statement(s) is/are correct?

- | | |
|-----------------|------------------|
| a) Both 1 and 2 | b) Both 2 and 3 |
| c) Both 1 and 3 | d) All the above |

11. Consider the following statements regarding Cytoplasm :

1. It is the fluid content inside the plasma membrane
2. Cytoplasm also contains many specialised cell organelles which are enclosed by membrane.
3. Viruses lack any membranes.

Which of the above statements is/are correct?

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

The correct statements are:

- a) 1 and 3 b) 2, 3 and 4
 c) All the above d) None of the above

12. Which of the following is not correct regarding Protista?

- a) It includes many kinds of unicellular eukaryotic organisms
 b) These organisms use appendages, such as hair-like cilia or whip like flagella for moving around
 c) Their mode of nutrition can be autotrophic only.
 d) Some of the examples of Protista are Diatom and Protozoans

15. Consider the following statements:

- Critical mass is the minimum amount of radioactive substance required to start a chain reaction.
- French physicist Henri Becquerel discovered radioactivity.
- In most successful reactors, Liquid sodium metal is used as the coolant, which removes the heat energy produced in short time.
- In a nuclear reactor, the chain reaction of nuclear fission is controlled (or made critical) by using controlling rods made of Cadmium or Boron.

The correct statements are:

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

13. Consider the following statements regarding Molecular Phylogeny :

- It is the analysis of hereditary molecular differences, mainly in DNA sequences, to gain information on an organism's evolutionary relationships.
- The result of a molecular phylogenetic analysis is expressed in a phylogenetic tree.
- Molecular phylogenetics is one aspect of molecular systematics, a broader term that also includes the use of molecular data in taxonomy and biogeography.

Which of the above statement(s) is/are correct?

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

16. Match List-I (*Research Centre*) with List-II (*Location*) and give answer using the code given below:

List-I

- A. Indira Gandhi Centre for Atomic Research (IGCAR)
 B. Institute for Plasma Research
 C. Raja Raman Centre for Advanced Technology
 D. Nuclear Fuel Complex

List-II

- Hyderabad
- Indore
- Kalpakkam
- Gandhinagar

Code:

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 4 | 1 | 2 |
| b) | 3 | 4 | 2 | 1 |
| c) | 1 | 2 | 3 | 4 |
| d) | 2 | 1 | 3 | 4 |

14. Consider the following statements:

- The splitting up of the nucleus is called nuclear fusion.
- The nuclear fusion is carried out by bombarding the heavy nuclei with neutrons.
- The nuclear fission is carried out by heating the light atoms to an extremely high temperature.
- The energy produced in nuclear fission reaction is much more than that produced in a nuclear fusion reaction.

17. Consider the following statements:

1. An aircraft carrier is a warship designed with a primary mission of deploying and recovering aircraft, acting as a seagoing airbase.
2. INS Vikramaditya is the new name for the former Soviet aircraft carrier Admiral Gorshkov.
3. The Shivalik class frigates or project 17 class frigates are multi-role frigates with stealth features being built for the Indian Navy.
4. The Godavari class frigates are guided-missile frigates of the Indian Navy.

The correct statements are:

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

18. Consider the following statements:

1. Sonar is a technique that uses sound propagation to navigate, communicate with or detect other vessels.
2. Passive Sonar is useful for listening the sound made by vessels but, active sonar emits pulses sound for listening echoes.
3. HUMSA is a state of art ship-borne sonar designed and developed by the Naval Physical and Oceanographic Laboratory (NPOL), Kochi.
4. SUJAV is a compact communication electronic warfare suit.

The correct statements are:

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

19. Consider the following statements:

1. LASER is an optical device which produces an intensive beam of coherent, monochromatic light.
2. Metal ion Lasers are gas lasers that generate deep ultraviolet wavelengths.
3. Optical laser is widely used in optical fibers.

4. Laser can be used for isolating U-235 Isotopes from natural Uranium and provides for easiest and fastest method of enrichment.

The correct statements are:

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

20. Consider the following statements on Agni Missile Systems:

1. Agni-I is a medium range surface to surface missile with single stage solid propulsion.
2. Agni-II is an Intermediate range ballistic missile with two stage liquid propellant rocket motors.
3. Agni-III is a Long range ballistic missile with three stage solid propellant rocket motors.
4. Agni-IV is a long range ballistic missile with a range of 3500 km and carbon composite re-entry vehicle.

The correct statements are:

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

21. Consider the following statements:

1. It is a tactical battlefield support missile of 150 km range and with very high accuracy, capable of carrying multiple types of warheads which can neutralize a wide variety targets in the battlefield.
2. The weapon system consists of a high mobility autonomous launcher carrying six missiles, and in built communication system.
3. It is a solid propellant missile.

The above mentioned characteristics represents which one among the following missiles.

- a) Nag b) Prahar
c) Brahmos d) Akash

22. Which one among the following statement is correct regarding Daksh?

- a) It is a fully autonomous, Unmanned Aerial Vehicle (UAV) used for gathering information from distance.

- b) It is a remotely operated vehicle, capable of being remotely controlled over a range of 500 mt. line-of-sight or up to there walls within buildings used by the Bomb Disposal Units.
- c) It is a carbon composites smart bridge.
- d) Multi-Span mobile bridge
23. Which one among the following pair is not correct matched?
- a) Nishant : Unmanned Aerial Vehicle
- b) Lakshya : Pilotless Target Aircraft
- c) Varunastra : Ship launched anti submarine Torpedo
- d) NAGAN : Sonar system with target classification facilities
24. Consider the following statements:
1. The Lunar crater observation and sensing satellite (LSROSS) was a robotic spacecraft operated by NASA.
 2. Phoenix is a robotic spacecraft on a space exploration mission on mars under the mars scout programme.
 3. Aditya-1 is the first Indian space based solar Coronagraph to study solar Corona in visible and near IR bands.
 4. The Baikonur Casmodrome also called Tyuratam is the world's oldest and largest working space launch facility.
- The correct statements are:
- a) 1, 2 and 3 b) 2, 3 and 4
- c) 1, 3 and 4 d) All the above
25. Consider the following statements:
1. New Horizon is NASA robotic spacecraft mission to the dwarf planet Ceres.
 2. Ulysses was a robotic space probe designed to study the Saturn.
 3. Dawn is a robotic space craft sent by NASA on a space exploration mission to the asteroid Vesta & dwarf plant Pluto.
- The correct statements are:
- a) 1 and 2
- b) 2 and 3
- c) All the above
- d) None of the above
26. The world's highest ground based telescope observatory is located in:
- a) Mexico
- b) Colombia
- c) Russia
- d) India
27. Match List-I (*Industries under Department of Atomic Energy*) with List-II (*Location*) and give answer as per the code given below:
- List-I**
- A. Nuclear Fuel Complex
- B. Uranium Corporation of India Ltd.
- C. Board of Radiation & Isotope Technology
- D. Indian Rare Earth Ltd.
- List-II**
1. Jaduguda
 2. Bangalore
 3. Hyderabad
 4. Mumbai
- Code:**
- | | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 1 | 4 | 2 |
| b) | 3 | 1 | 4 | 4 |
| c) | 4 | 1 | 3 | 2 |
| d) | 2 | 1 | 4 | 3 |
28. Which one among the following pair on the nuclear energy park and its location is not correctly matched?
- a) Mithi Virdi : Gujarat
- b) Bargi : Madhya Pradesh
- c) Haripur : West Bengal
- d) Markandi : Chhatisgarh

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29. Consider the following statements:

1. Cirus is the oldest of India's research reactors which was designed by BARC and built with assistance from the United Kingdom.
2. Apsara is the second oldest reactor in India which is modeled on the Canadian Chalk River National Research Experimental (NRX) Reactor.
3. Zerlina is India's largest research reactor and primary source of weapons grade plutonium.

The correct statements are:

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

30. Consider the following statements on Stem Cells:

1. They are unspecialized cells that renew themselves for long periods through cell division.
2. Under certain physiologic or experimental conditions they can be induced to become cells with special functions such as the beating cells of the heart muscle or the Insulin-producing cells of the Pancreas.
3. Scientists primarily worked with two kinds of stem cells embryonic stem cells and the Adult Stem Cells.

The correct statements on stem cells are:

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

31. Which one among the following is correctly about the DNA Shoah Project?

- a) It is a stem cell project for cardiac cells
- b) It is a gene mapping project for Pighon Pea by the ICRISAT
- c) It is a gene bank project of UNICEF
- d) It is a genetic database of people who lost family during the Holocaust

32. Consider the following about Genetically modified crops:

1. Bacillus Thuriensis (Bt) is a spore forming (flash animation) bacterium that produces crystals protein (cry proteins), which are toxic to many species of insects.
2. Bt is distributed in the soil sparsely but frequently worldwide.
3. The Bt toxin dissolve in the high pH insect gut and become active. The toxins then attack the gut cells of the insect, punching holes in the lining.
4. Bt. Cotton is the only transgenic crop approved for commercial cultivation in India.

The correct statements are:

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

33. Consider the following statements:

1. Indian Scientists have succeeded in producing tomatoes which are free of Oxalic acid, a compound that causes Kidney stones.
2. Trichogramma (egg parasitoid) is useful for the control of Lepidopteran pest such as sugar cane inter-node borer is a biopesticide.
3. Biofertilizers don't contribute to soil erosion by breaking of soil structure but they destroy other micro organisms in soil.
4. Bombyx mori is a transgenic silk worm.

The correct statements are:

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

34. Consider the following statements:

1. Pradarshini is a rich collection of computer generated designs which are inspired by the traditional Indian art forms.
2. Shaili is an online "show case" for rural artisans and handicrafts people to market their products.

3. Blue Gene is a computer architecture project designed to produce several next-generation supercomputers, to reach operating speeds in the petaflops range and currently reaching sustained speeds over 360 teraflops.
4. Garuda is a collaboration of science researchers and experimenters on a nationwide grid of computational nodes, mass storage and scientific instruments that aim to provide the technological advances required to enable data and compute intensive science for the 21st century.

The correct statements are:

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

35. Consider the following statements:

1. EYGIN is a computer system that traces the human users eye movement and transmits it to the mouse pointer on the monitor.
2. EYGIN has been developed by researchers at the Fraunhofer Institute for Industrial Engineering IAO in Stuttgart, Germany in cooperation with industrial partners.
3. "Eka" of China is the world's fastest super computer
4. "Tianhe-1A" is the fastest computer in India, developed by Computational Research Laboratories (CRL) wholly owned subsidiary of Tata sons.

The correct statements are:

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

36. Consider the following statements on Very Small Aperture Terminal (VSATs)

1. VSAT is a two-way satellite ground station with a dish antenna that is smaller than 3 meters
2. VSAT data rates typically range from broadband upto 90 Mbit/s.

3. VSAT access satellites in geosynchronous orbit to relay data from small remote earth stations (terminals) to other terminals or master earth station hubs (in star configurations)
4. VSAT provides a wireless link completely independent of the local terrestrial/wireline infrastructure.

The correct statements are:

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

37. Consider the following statements:

1. Carbon nanotubes are exceptionally strong against any crack or damage. It has very low aspect ratio.
2. Carbon nanotubes spontaneously explodes when exposed to an ordinary camera flash.
3. A carbon nanotube has enormous capacity to conduct electricity and transports heat better than diamond.
4. Mass production of nanotubes of uniform nature is a challenge because the metallic portion in a mixture of carbon nanotube has to be manually eliminated to recover the semiconducting areas.

The correct statements are:

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

38. People who have migrated from the plains to an area adjoining Rohtang Pass about six months back:

- a) have the usual RBC count but their haemoglobin has very high binding affinity to O₂.
- b) have more RBC and their haemoglobin has a lower binding affinity to O₂.
- c) are not physically fit to play games like football.
- d) suffer from altitude sickness with symptoms like nausea, fatigue, etc.

39. Consider the following statements regarding virus:
1. Antibiotics have no effects on them.
 2. All are parasites.
 3. All of them have helical symmetry.
 4. They have ability to synthesize nucleic acids and proteins.
- Code:**
- a) 1, 2, 3 correct
 - b) 1, 2, 4 correct
 - c) 1 and 2 correct
 - d) All statements are correct
40. Which of the following are correctly matched?
1. Callus- Unorganised mass of cells produced in tissue culture.
 2. Somatic hybridization- Fusion of two diverse cells.
 3. Vector DNA- Site for t-RNA synthesis.
 4. Micro propagation- In vitro production of plants in large numbers.
- Code:**
- a) All are correct
 - b) 1 and 2 correct
 - c) 1, 2 and 4 correct
 - d) 2, 3 and 4 correct
41. Choose the correct statement/s.
1. Eutrophication is an artificial phenomenon in fresh water bodies.
 2. Most of the forests have been lost in tropical areas.
 3. Ozone in upper part of atmosphere is harmful to animals.
 4. Greenhouse effect is a natural phenomenon.
- Code:**
- a) 1 and 2 are correct
 - b) 2, 3 and 4 are correct
 - c) 2 and 4 are correct
 - d) 1, 2 and 4 are correct
42. A normal visioned man whose father was colour-blind, marries a woman whose father was also colour-blind. They have their first child as a daughter. What are the chances that this child would be colour-blind?
- a) 50%
 - b) 100%
 - c) 0%
 - d) 25%
43. A certain road accident patient with unknown blood group needs immediate blood transfusion. His one doctor friend at once offers his blood. What was the blood group of the donor?
- a) Blood group A
 - b) Blood group B
 - c) Blood group AB
 - d) Blood group O
44. Which one of the following four glands are not correctly matched with the accompanying description?
1. Thyroid – hyperactivity in young children causes dwarfism.
 2. Thymus – starts undergoing atrophy after puberty.
 3. Pancreas – alpha cells release hormone which control blood sugar.
 4. Adrenal gland – controls gamete synthesis in body.
- Code:**
- a) Only 1, 2 and 4
 - b) Only 2, 3 and 4
 - c) Only 1, 2 and 3
 - d) All the above
45. In myopia or short sightedness
- a) image is formed slightly in front of retina because eye ball is longer
 - b) eye ball is normal but image is formed over blind spot
 - c) eye ball is normal but images is formed slightly behind the retina due to faulty lens
 - d) curvature of cornea becomes irregular.

46. On seeing a tiger, the heart beat and blood pressure increase due to release of hormone
- adrenaline
 - thyroxine
 - parathormone
 - insulin
47. Examination of blood of a person suspected of having anaemia, shows large, immature, nucleated erythrocytes without haemoglobin. Supplementing his diet which of the following is likely to alleviate his symptoms?
- Thiamine
 - Folic acid and cobalamine
 - Riboflavin
 - Iron compounds
48. Choose the correct statements during strenuous exercise,
- sufficient oxygen supply is absent
 - glucose is converted into glycogen
 - glucose is converted into pyruvic acid
 - glucose is converted into lactic acid
- Code:**
- 1 is correct
 - 1, 2 and 4 are correct
 - 1 and 4 are correct
 - 1, 3 and 4 are correct
49. With reference to urination in humans, consider the following statements:
- The place of urea synthesis is liver.
 - After the waste is removed in the kidney, the cleaner blood is sent back through renal artery.
 - The process of urination in kidney involves three steps.
- Which of these statements is/are correct?
- 2 and 3
 - 1 and 2
 - 1 and 3
 - 1, 2 and 3
50. Consider the following statements:
- Washing soda
 - Vanilla
 - Clove
 - Indigo
- Which of the following is/are plant products?
- 1 only
 - All the above
 - 2 and 3 only
 - 2, 3 and 4
51. A small pouch containing silica gel is often found in bottles of medicine in tablet or powder form because silica gel
- absorbs moisture
 - kills germs and microbes
 - make the atmosphere inert
 - absorbs all gases present inside the bottle
52. Detergents are known to pollute rivers and water ways. However, detergents can be made biodegradable and pollution free by taking
- cyclic hydrocarbon chain
 - unbranched hydrocarbon chain
 - shorter hydrocarbon chain
 - hydrocarbon with more branching
53. Consider the following statements regarding Xylem and Phloem:
- They are permanent and complex tissues.
 - Xylem consists of tracheids, vessels, xylem parenchyma and xylem fibers and many of them have thin walls and alive cells.
 - Phloem consists of sieve tubes, companion cells, fibers and phloem parenchyma and it transports food from leaves to other parts of the plant.
- Which of the above statement is wrong?
- 1 only
 - 2 only
 - Both 1 and 2
 - Both 2 and 3

54. Which of the following is/are an example of simple permanent tissues?

1. Parenchyma
2. Collenchymas
3. Sclerenchyma
4. Xylem

The correct code is:

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

55. Consider the following regarding reflex:

1. Spontaneous voluntary activities, evoked by stimulation of receptors are called reflexes.
2. Reflexes can flow in both directions.

Which of the above statement(s) is/are not correct?

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

56. Match the followings :

Parts of the Brain Function

- | | |
|-----------------|---|
| A. Cerebellum | 1. Coordinates muscular activity |
| B. Hypothalamus | 2. Controls normal body temperature, food intake and thirst. |
| C. Thalamus | 3. It is the interpretation centre for sensory impulses such as pain, temperature and pressure. |

Code:

- | | | | |
|----|---|---|---|
| | A | B | C |
| a) | 1 | 2 | 3 |
| b) | 2 | 1 | 3 |
| c) | 3 | 2 | 1 |
| d) | 2 | 3 | 1 |

57. Which of the following is/are correct regarding the differences between Enzyme and Hormones?

1. Enzymes are produced from endocrine glands whereas hormones are produced by exocrine glands.

2. Chemically enzymes are proteins whereas the hormones can be protein, steroids, polypeptides etc.

The correct code is:

- a) Only 1 b) Only 2
 c) Both 1 and 2 d) Neither 1 and 2

58. Match the following:

Hormone

Function

- | | |
|-----------------|---------------------------------|
| A. Insulin | 1. Increase blood calcium level |
| B. Glucogen | 2. Lowers the blood glucose |
| C. Parathormone | 3. Increase the blood glucose |

Code:

- | | | | |
|----|---|---|---|
| | A | B | C |
| a) | 2 | 3 | 1 |
| b) | 3 | 2 | 1 |
| c) | 3 | 1 | 2 |
| d) | 1 | 2 | 3 |

59. Match the following:

Gland

Location

- | | |
|------------|--------------------------------|
| A. Thyroid | 1. Top of the Kidney |
| B. Adrenal | 2. Ventral side in neck region |
| C. Pineal | 3. In the brain |

Code:

- | | | | |
|----|---|---|---|
| | A | B | C |
| a) | 2 | 1 | 3 |
| b) | 2 | 3 | 1 |
| c) | 3 | 2 | 1 |
| d) | 3 | 1 | 2 |

60. Consider the following statements regarding Adrenals:

1. There are two adrenal glands, one at the top of each kidney .
2. Adrenal gland has an outer portion called medulla and inner portion called cortex.

3. Adrenal Medulla contributes to fight, fight or flight reaction preparing the body for emergency conditions.

Which of the above statement(s) is/are correct?

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

61. Which of the following is/are the functions of Placenta?

1. Transfer water, nutrients from mother to developing embryo.
2. Transfer wastes from the embryo to mothers blood
3. Provides protein to embryo
4. Produces hormones like oestrogen

The correct code is:

- a) Both 1 and 2 b) Both 2 and 3
 c) 1, 2 and 3 d) All the above

62. Consider the following statements:

1. The reproductive cells contain haploid chromosome number whereas the body cells contain diploid chromosomes.
2. A flower can have asexual or bisexual reproductive cells.

Which of the above statement(s) is/are correct?

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

63. A body is moving in a circular path with constant speed, then which of the following represents the type of motion correctly?

- a) Accelerating motion
- b) Non accelerating motion
- c) Uniform motion
- d) None of these

64. Consider the following statements regarding Archimedes's principle?

1. It states that when a body is immersed fully

and partially in a fluid, it experiences an upward force that is equal to the mass of the fluid displaced by it.

2. Unlike the hydrometer, Lactometer is based on this principle to measure the purity of milk.

Which of the above statement(s) is/are correct?

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

65. Which of the following is/are not correct regarding Kepler's laws regarding the motion of planets?

1. The orbit of a planet is an ellipse with the sun at one of the foci
2. The line joining the planet and the sun sweep equal areas in equal intervals of time.
3. The cube of the mean distance of planet from the sun is proportional to the square of its orbital period.

The correct code is:

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

66. Consider the following statements regarding power:

1. The concept of average power is useful as the rate of doing work of an agent is different in different interval.
2. The rate of transfer of energy is called work and the speed of work done is called power.

Which of the above statement(s) is/are correct?

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

67. Under free fall conditions of an object, if the effect of air resistance on the motion of the object has not been ignored, then which of the following will be correct?

- a) Potential energy will decrease but kinetic energy will increase by the same amount of decrease in potential energy.
- b) Potential energy will increase but kinetic energy will decrease by the same amount of decrease in kinetic energy
- c) Potential energy will decrease but kinetic energy will increase by the less amount of decrease in potential energy
- d) Potential energy will increase but kinetic energy will decrease by the less amount of decrease in kinetic energy
68. Consider the following statements:
- Rhinoceroses, whales and elephants communicate using ultrasounds whereas the Dolphins, bats etc communicate using infrasound.
 - Earthquakes produce high frequency ultrasound before the main shock waves begin.
- Which of the following statement(s) is/are correct?
- a) 1 only b) 2 only
- c) Both 1 and 2 d) Neither 1 nor 2
69. Arrange the following substances in the decreasing order of speed of sound in these substances?
- Aluminium
 - Iron
 - Ethanol
 - Sulphur di oxide
- The correct sequence is:
- a) 1, 2, 3, 4 b) 2, 1, 3, 4
- c) 2, 1, 4, 3 d) 1, 2, 4, 3
70. A fuse is used in mains electric supply as safety devices. Which one of the following statements about a fuse is correct?
- It is connected in parallel with the main switch.
 - It is made mainly from silver alloys.
 - It must have a low melting point.
 - It must have a very high resistance.
71. Consider the following statements:
- The phenomena of scattering of light by colloidal particles gives rise to the Tyndall effect.
 - The colour of the scattering light depends on the size of the scattering particles.
- Which of the above statement(s) is/are correct?
- a) Only 1 b) Only 2
- c) Both 1 and 2 d) Neither 1 nor 2
72. Consider the following statements :
- Myopia, in which the image of distant object is focussed before the retina is corrected by using a concave lens of suitable power.
 - Hypermetropia, in which the image of nearby object is focussed beyond the retina, is corrected by using a convex lens of suitable power.
- Which of the above statement(s) is/are correct?
- a) 1 only b) 2 only
- c) Both 1 and 2 d) Neither 1 nor 2
73. Consider the following statements regarding Plasma :
- The plasma state consists of super energetic and super excited particles where these particles are in both ionise and non ionised states.
 - The sun and the stars glow because of the presence of plasma in them which is formed because of the high temperature.
- Which of the above statement(s) is/are correct?
- a) 1 only b) 2 only
- c) Both 1 and 2 d) Neither 1 nor 2
74. Which of the following statement represents correctly the phenomena of formation of water droplets on the outer surface of a glass containing ice cold water?
- The water vapour present in air, on coming in contact with the cold glass water, loses energy and gets converted into liquid state.

- b) The water vapour present in air, on coming in contact with the cold glass water, absorbs energy and gets converted into liquid state.
- c) The water vapour present in air, on coming in contact with the cold glass water, loses energy and gets converted into solid state.
- d) The water vapour present in air, on coming in contact with the cold glass water, absorbs energy and gets converted into solid state.
75. Consider the following statements:
1. Evaporation causes cooling as it leads to the release of the energy to the surrounding.
 2. Boiling is bulk phenomena and the particles from the bulk of the liquid change into vapour state.
- Which of the above statement(s) is/are correct?
- a) Only 1 b) Only 2
c) Both 1 and 2 d) Neither 1 nor 2
76. Consider the following statements regarding neutron:
1. In 1932, J. Chadwick discovered neutron
 2. Neutron is a charge less particle and having mass almost equal to the mass of the proton.
 3. Neutron is present in the nucleus of all the atoms.
- Which of the above statement(s) is/are correct?
- a) Both 1 and 2 b) Both 2 and 3
c) Both 3 and 1 d) All of the above
77. Consider the following statements regarding the Bohr's Model:
1. Only certain special orbits known as discrete orbits of electrons are allowed inside the atom.
 2. While revolving in discrete orbits the electrons radiate energy to acquire minimum energy state.
- Which of the above statement(s) is/are correct?
- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2
78. Which of the following is/are feature(s) of Rutherford's Nuclear Model?
1. There is a positively charged centre in an atom called the nucleus and nearly all the mass of an atom resides in the nucleus.
 2. The electrons revolve around the nucleus in well defined orbits.
 3. The size of the atom is mostly occupied by the nucleus.
- The correct code is:
- a) Both 1 and 2 b) Both 2 and 3
c) Both 3 and 1 d) All of the above
79. Consider the following statements regarding double displacement reactions:
1. Two different atoms or groups of atoms (ions) are exchanged in double displacement reactions.
 2. Precipitation reactions, which produces soluble salts are generally the example of single displacement reaction.
- Which of the above statement(s) is/are correct?
- a) 1 only b) 2 only
c) Both 1 and 2 d) Neither 1 nor 2
80. Consider the following statements:
1. Tooth decay starts when the pH of the mouth is lower than 5.5
 2. Our body can work within the pH range of 7 to 7.8.
 3. When the pH value of rain water is less than 5.6, it is called as acid rain.
- Which of the above statement(s) is/are correct?
- a) Both 1 and 2 b) All of the above
c) Both 2 and 3 d) Only 2
81. Which of the following is/are the uses of washing soda?
1. Cleaning agent for domestic purpose
 2. Removing hardness of water
 3. Manufacturing of compounds such as Borax.
 4. Used for supporting fractured bones

The correct code is:

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

Code:

- a) All are correct
 b) None is correct
 c) 1, 2 and 3 is correct
 d) 3 and 4 are correct

82. Consider the following statements:

1. Bleaching power is used as a reducing agent in many chemical industries.
2. Baking Soda is used as a soda-acid fire extinguisher.

Which of the above statement(s) is/are correct?

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

86. Consider the following:

1. Photosynthesis
2. Attracting Animals
3. Storage of food
4. Cell Respiration
5. Storage of forms of Vitamin A

Functions of the plastids includes which of the above statements:

Code:

- a) All the above b) 1, 2, 3 and 4
 c) 1, 2, 3 and 5 d) 1, 2 and 5

83. Consider the following statements:

1. Robert-Hook discovered Protoplasm.
2. According to the cell theory proposed by Schleiden and Schwann new cells arise from the pre-existing cells.
3. Cells are structural units of all organism.

The correct statements are:

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

87. Consider the following statements:

1. In the G1 stage of the cell cycle, cells create RNA & proteins and increase in size.
2. The spindle apparatus is formed in the Telophase
3. Ribosome is not a membrane bound organelle
4. During Meiosis-I, member of chromosome is halved.

The correct statements are:

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

84. Which of these are not characteristic features of Prokaryotes?

1. Presence of 80S Ribosomes
2. Presence of Circular DNA
3. Absence of Endoplasmic Reticulum

Code:

- a) Only 1 b) Only 3
 c) 1 and 3 d) None of these

85. Consider the following statements

1. All cells are protected by cell wall
2. All cells with cell wall has its main component Cellulose
3. A phospholipid-bilayer Plasma Membrane is present in all living cells.
4. Plastids are present in the animal cells

88. Consider the following statements:

1. Lichen is a Symbiotic Association between Fungi and Algae.
2. Ecological succession is the process of evolution of an ecological community from simpler community to complex one.
3. Arboreal lives on the trees but Xerocoles lives in the underground areas.

The correct statements are:

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

89. Consider the following statements:

1. Blood is a collective tissue.
2. Ability of a cell to divide and produce all other types of cells is called Totipotency.
3. Functions of epithelium includes, protection, digestion and sensory perception.
4. Haversian canals is found in the large intestine of the human being.

The correct statements are:

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

90. Consider the following statements:

1. The Osmotic pressure of blood is maintained by Albumin in Plasma.
2. Selective breeding of plants and animals for agriculture is an example of artificial selection.
3. Convergent evolution is the process by which different organisms evolve similar characters.
4. Genealogy is the science of evolutionary relations between the organisms.

The correct statements are:

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

91. Consider the following statements:

1. Haemophilia is not an example of sex linked inheritance.
2. Turner syndrome is not an abnormality of sex chromosome.
3. Human skin colour is an example of polygenic inheritance.

The correct statements are:

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

92. Consider the following statements:

1. Lotus flower is a modified shoot.
2. The arrangement of leaves in a plant is called Phyllotaxy.
3. Filament is a part of the female sex organ in plants.
4. Peepal inflorescence is an example of synconium.

The correct statements are:

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

93. Consider the following statements:

1. The surface density of a charge particle at a point on the surface of conductor is directly proportional to the radius of the conductor.
2. Electric field intensity inside the conductor is maximum but it is minimum on the surface.
3. Primary cell are the cells which are serviceable even after the complete discharge.

Which of the above statement(s) is/are correct?

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

94. Consider the following statements:

1. The magnetic lines of force intersect only at the equators.
2. The nature of Cathode rays is independent of nature of cathode and the gas in the discharge tube.
3. Cloud Chamber is used to detect the presence and kinetic energy of radioactive particles.

Which of the above statement(s) is/are correct?

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

95. Consider the following statements:

1. Rainbow is formed due to the dispersion of the sun light by suspended water droplets.

2. In primary rainbow, the red colour is on the convex side and violet colour is on concave side.

3. The primary rainbow is formed due to the two refraction and one total internal reflection.

Which of the above statement(s) is/are not correct?

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

96. Consider the following statements:

1. Mach number is defined as the ratio of the speed of sound source to the speed of sound in the same medium under the same conditions of pressure and temperature.

2. If Mach number is more than 1 then sound is subsonic and if it is less than 1 then sound is supersonic.

3. The supersonic objects leaves a conical region of disturbances in air and such waves are called shock waves.

Which of the above statement(s) is/are correct?

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

97. Consider the following statements:

1. Infra red rays are electromagnetic waves whereas the ultrasonic waves do not come under this category.

2. In simple harmonic motion the acceleration is zero at the mean position.

3. In simple harmonic motion, at the extreme position, the potential energy is minimum.

Which of the above statement(s) is/are correct?

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

98. Consider the following statements:

1. Slow rise in the barometric pressure indicates moderate rainfall.

2. In a static liquid, at the same horizontal level, pressure is same at all the points.

3. Hydraulic press and Hydraulic break work on the principle of Pascal whereas Hydraulic lift is based on Archimedes principle.

Which of the above statement(s) is/are incorrect?

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

99. Consider the following statements:

1. Viscosity of a liquid is due to cohesive force between its molecules whereas the viscosity of the gas is due to the diffusion of its molecule from one layer to the other.

2. With the increase in temperature, the viscosity of liquid increases whereas the viscosity of gas decreases.

3. Venturi Meter is a device used to measure the rate of flow of fluid.

Which of the above statement(s) is/are correct?

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

100. Consider the following statements:

1. Silver Bromide is used in photography whereas ethylene bromide is mixed with leaded petrol.

2. White phosphorous is more reactive than red phosphorous.

3. Silver nitrate is used as the marker in election whereas the sodium peroxide is used in submarine.

Which of the above statement(s) is/are correct?

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

101. Consider the following statements:

1. Delta metal is an alloy of Copper, Zinc and Iron.

2. Ferrous oxide is used in green glass formation whereas Ferric oxide is used in electroplating of ornaments.

3. Hydrated Aluminium is used in cracking of petroleum

Which of the above statement(s) is/are correct?

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

102. Consider the following statements:

1. Wine is more acidic as compared to milk.
2. Sea water is more basic as compared to the pure water.
3. All bases are alkali but all alkalies are not bases.

Which of the above statement(s) is/are correct?

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

103. Consider the following statements:

1. Covalent bonds are directional, soluble in organic solvent but insoluble in water.
2. Ionic bonds are non directional, insoluble in organic solvent but soluble in water.
3. If hydration energy is more than the lattice energy then the compound is soluble in water.

Which of the above statement(s) is/are correct?

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

104. Electric Current passing through a metallic wire generally gets heated because of

- a) Collision of conduction electron with each other
- b) Collision of the atoms of the metal with each other
- c) The energy released in the ionisation of the atoms of the metal
- d) Collision of the conduction electrons with the atoms of the metallic wire.

105. Consider the following statements regarding Glass:

1. Glass is composed of about 75% silica (SiO_2) plus Na_2O , CaO , and several minor additives.

2. Glasses can be made of quite different classes of materials: metallic alloys, ionic melts, aqueous solutions, molecular liquids, and polymers.

3. Glass-ceramic materials share many properties with both non-crystalline glass and crystalline ceramics and are formed as a glass, and then partially crystallized by heat treatment

Which of the above statement(s) is/are incorrect?

- a) Both 1 and 2 b) Only 1
 c) Only 2 d) None of the above

106. Consider the following statements:

1. Gasoline is more volatile than diesel oil or kerosene, not only because of the base constituents, but also because of additives.

2. A high octane rated fuel, such as liquefied petroleum gas (LPG), has a lower energy content than lower octane rated gasoline, resulting in an overall lower power output at the regular compression ratio of an engine run at on gasoline.

3. Gasoline floats on water; water cannot generally be used to extinguish a gasoline fire.

Which of the above statement(s) is/are correct?

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

107. Consider the following statements:

1. Some anthropogenic aerosols, particularly sulphate aerosols from fossil fuel combustion, exert a cooling influence on the climate which partly counteracts the warming induced by greenhouse gases such as carbon dioxide.

2. Aerosol has led to a reduction in the monsoon rainfall over India in the past 50 years and above.

3. An aerosol is a colloid suspension of fine solid particles or liquid droplets in a gas.

Which of the above statement(s) is/are correct?

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

108. Consider the following statements:

1. Polyvinyl chloride, commonly abbreviated PVC, is the third-most widely-produced plastic, after polyethylene and polypropylene.
2. Chlorinated PVC is even more rugged and more rigid.
3. It can be made softer and more flexible by the addition of plasticizers, the most widely used being phthalates.

Which of the above statement(s) is/are correct?

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

109. Consider the following statements

1. Bleaching powder is used in sugar industry for bleaching sugar cane juice before its crystallization.
2. Bleaching powder is actually a mixture of calcium hypochlorite and the basic chloride with some slaked lime, Ca(OH)_2 .

3. Calcium hypochlorite is best kept in a cool and dry place away from any organic material as it undergoes self heating and rapid decomposition accompanied by the release of toxic chlorine gas

Which of the above statement(s) is/are correct?

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

110. Consider the following statements:

1. The solubility of one substance in another is determined by the balance of intermolecular forces between the solvent and solute, and the entropy change that accompanies the solvation.
2. Factors such as temperature and pressure will alter this balance, thus changing the solubility
3. Gaseous solutes exhibit more complex behaviour with temperature and as the temperature is raised, gases usually become less soluble in water but more soluble in organic solvents.

Which of the above statement(s) is/are correct?

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