

SNT BIOTECH TEST

Q.1) Consider the following statements:

1. X-rays do not pass through soft tissues 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

Q.2) During fermentation, the volume of Idli batter increases due to:

- a) the presence of microorganisms that release carbon dioxide during respiration.
- b) endothermic reaction by the yeast present inside the batter
- c) multiplying of microorganisms that break down the complex batter.
- d) production of alcohol by the yeast contained inside the batter.

Q.3) Consider the following statements with reference to "Chemosynthesis":

1. It is the synthesis of organic compounds by bacteria using energy derived from inorganic chemical processes.
2. Chemosynthetic organisms use the energy released from chemical reactions to produce sugar.
3. Unlike in photosynthesis, organisms carrying out chemosynthesis do not have chlorophyll.

Which of the statements given above is/are correct?

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

Q.4) With reference to CyberKnife technology used for medical procedures, consider the following statements:

1. It is a non-invasive and robotic radiosurgery.
2. It uses real-time x-rays during a treatment
3. Its use is limited to treating lesions in the brain.

Which of the statements given above is/are correct?

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

Q.5) With reference to Bio-computers, consider the following statements:

1. These use biologically derived molecules such as Deoxyribonucleic Acid (DNA) to perform digital computations.
2. These can be used for the analyzing firing patterns of neurons to treat disease like Alzheimer's.

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

Q.6) AlphaFold and ESMFold, sometimes seen in the news, are related to:

- a) ransomware attacks
- b) genome editing techniques.
- c) crater on Mars
- d) protein mapping

Q.7) Consider the following pairs:

Type of RNA	Function
1. mRNA	Carry protein information from rRNA to cytoplasm for translation
2. rRNA	Direct the catalytic steps of protein synthesis
3. tRNA	Serve as a link between mRNA and amino acids

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

- 1 only
- 2 only
- 2 and 3 only
- 1, 2 and 3 only

Q.8) Consider the following statements:

- All viruses contain both RNA and DNA.
- Lichens are symbiotic associations between algae and fungi.
- Bacteriophages are a group of bacteria that are found together in patches.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- 2 and 3 only
- 1, 2 and 3

Q.9) With reference to viruses, consider the following statements:

- They are usually smaller than bacteria.
- They reproduce inside the living cells of other species.
- They can be cultured in a synthetic medium to produce vaccines.

Which of the statements given above are correct?

- 1 and 2 only
- 2 and 3 only
- 1 and 3 only
- 1, 2 and 3

Q.10) Which one of the following best describes 'Transgenic Animals'?

- Genetically Modified animals with additional foreign genes
- Offsprings produced from a cross between two different species
- Animals of hybrid species which are sterile
- Animals with chromosomal disorders

Q.11) Which one of the following best describes the term 'Xenotransplantation'?

- It involves transplantation of animal cells and organs into the human body.
- It is the replacement of a missing body part with an artificial device.
- It is the growth of a body part with the help of special types of cells.
- It is the procedure for racial treatment and planned breeding.

Q.12) With reference to the Genome Sequencing initiatives in India, consider the following statements:

- IndiGen project aims to take a genome sequence of Indians that belong to diverse ethnicities
- Genome India Project aims to study the genomic data of cancer patients from India.

Which of the statements given above is/are correct?

- 1 only
- 2 only
- None of these
- 1, and 2 only

Q.13) Consider the following statements:

1. Nuclear fusion does not involve the release of carbon dioxide.
2. Nuclear fission is the source of energy for the sun.
3. Unlike Nuclear Fission, Nuclear Fusion is more useful in producing weapons.
4. Nuclear Fusion does not create long-lived radioactive nuclear waste.

Which of the statements given above are correct?

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

Q.14) Which of the following statements is/are correct with reference to types of immunity?

1. Monoclonal antibodies are main agent of active immunity made in human body by B Cells.
2. Acquired immunity is developed over a lifetime.

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

Q.15) With reference to stem cells, consider the following statements:

1. Embryonic stem cells are multipotent stem cells derived from the embryo.
2. Unlike embryonic stem cells, induced pluripotent stem cells are derived from adult somatic cells.
3. Adult stem cells can differentiate into any type of cell.

Which of the statements given above is/are correct?

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

Q.16) Which of the following are present in prokaryotic cells?

1. Nuclear membrane
2. Ribosome
3. Cell wall
4. Cytoplasm

Select the correct answer using the code given below:

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

Q.17) Consider the following statements:

1. The genetic information is transferred from messenger RNA (mRNA) to DNA in case of transcription.
2. Information encoded in mRNA directs the addition of amino acids during protein synthesis in case of Translation.

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

Q.18) Consider the following:

1. Covaxin is a recombinant COVID-19 vaccine which uses weakened strains of adenovirus.
2. Covishield is a whole inactivated COVID19 vaccine developed from the Indian strain of novel Coronavirus.

Which of the following is correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

Q.19) Consider the following statement

1. No GM food crop has ever been approved for commercial cultivation in the country.
2. Golden rice is a variety of rice produced through genetic engineering to biosynthesize Beta-carotene.

3. The tolerance limit for the accidental presence of genetic material is 1% of the important food crop consignments.

Which of the following above is correct?

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

Q.20) Consider the following statement regarding hydrogen fuel cells

1. In a fuel cell hydrogen and oxygen are combined to generate electricity heat and water
2. One of the main disadvantages of fuel cells is that they operate with a lot of noise.
3. Fuel cells need to be periodically recharged.

Which of the following above is correct:

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

Q.21) Consider the following statement regarding Chimeric antigen receptor (CAR) T cells therapy

1. CAR T cells are genetically engineered to produce an artificial T cell receptor for use an immune therapy.
2. CAR T cells act as living drug against cancer cells.
3. T cell is a type of WBC and is developed from stem cell in the bone marrow

Which of the following above is correct

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

Q.22) Consider the following statements

1. Mitochondria have their own DNA distinct from the genetic material within the cell nucleus
2. Mitochondrial DNA makes up about 0.1% of a cells total DNA

3. A child's DNA is a mixture of both mother and father's DNA.

Which of the following above is correct:

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

Q.23) Consider the following statements

1. Stem cells are undifferentiated biological cells that can differentiate into specialized cells.
2. Embryonic stem cells can become all cell types of the body because they are pluripotent.
3. Currently in India there is no regulatory approval for stem cell therapy other than the hematopoietic stem cell transplantation for a hematological disorders.

Which of the following above is correct:

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

Q.24) Consider the following statements regarding BIOTECH-PRIDE guidelines

1. According to it, government is mandated to archive all life science data.
2. The guidelines will be implemented through the Indian Biological Data Centre (IBDC)
3. These guidelines don't allow sharing of biological data publicly.

Which of the statements given are correct

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

Q.25) Consider the following statement regarding glyphosate:

1. It is a narrow spectrum herbicide that is used for controlling weeds specifically during the cultivation of genetically modified crops.

2. It has the potential to kill most non-GM plants by inhibiting the synthesis of aromatic amino acids necessary for plant growth

Which of the following is correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) None

Q.26) Consider the following regarding RNA interference

1. RNA is highly conserved molecular mechanism used by eukaryotic organisms to control gene expression and to defend their genomes against RNA viruses.
2. It is a mechanism for silencing the transcript of an active gene called mRNA.
3. This technology is used for developing DNA vaccines against Zika virus and COVID19.

Which of the following above is correct?

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

Q.27) Which of the following statement is not correct?

- a) All natural fats are combination of monosaturated, polyunsaturated and saturated fatty acids.
- b) Saturated fatty acids build cell membranes and the sheaths surrounding nerves.
- c) Unlike unsaturated fatty acids, the trans-fats clog arteries and result in hypertension
- d) WHO has called for global elimination of industrially produced TFAs by 2023

Q.28) Consider the following statements

1. Mitochondrial DNA is the circular chromosome found outside the cellular organelles.

2. The mitochondrial genome is small and only contains a fraction of genetic information in the cell

Which of the statements give above is correct?

- a) 1 only
- b) 2 only
- c) Both a and b are true
- d) None of the above

Q.29) With reference to nucleic acid vaccines, consider the following

1. These vaccines use genetic material from a disease causing pathogen to stimulate an immune response against it
2. The genetic material used in the vaccines is essentially the entire eukaryotic DNA which provides the instructions for making a specific protein from the pathogen.
3. Advantages of nucleic acid-based vaccines include the simplicity of the vector and the ease of delivery

Which of the statements given above is correct?

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

Q.30) Gelbots have been in news recently, which of the following is potential uses of Gelbots

1. These worm inspired robots can crawl through human body and target source of illness.
2. They can be used in radiation therapy given to cancer patients.
3. This are designed to detect metallic objects inside human bodies

Which of the following options are correct?

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