

PYQ SNT BIOTECHNOLOGY

Pre 2022

Q1. Consider the following statements: DNA Barcoding can be a tool to:

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

Which of the statements given above is/are correct?

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

Q2. Which one of the following statements best describes the role of B cells and T cells in the human body?

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

Q3. In the context of vaccines manufactured to prevent COVID-19 pandemic, consider the following statements:

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

Which of the statements given above are correct?

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

Q4. Consider the following statements in respect of probiotics :

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

Which of the statements given above is/are correct?

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

Q5. Consider the following statements:

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

Which of the statements given above are correct?

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

Pre 2021

Q6. The term "ACE2" is talked about in the context of

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

Q7. “Triclosan” considered harmful when exposed to high levels for a long time, is most likely present in which of the following?

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

Q8. With reference to recent developments regarding ‘Recombinant vector Vaccines’, consider the following statements:

1. Genetic engineering is applied in the development of these vaccines.

2. Bacteria and viruses are used as vectors.

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

Q9. In the context of hereditary diseases, consider the following statements:

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

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

Which of the statements given above is/are correct?

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

Q10. Bollgard I and Bollgard II technologies are mentioned in the context of

- (a) Clonal propagation of crop plants
- (b) Developing genetically modified crop plants
- (c) Production of plant growth substances
- (d) Production of biofertilizers

Q11. Consider the following:

- 1. Bacteria
- 2. Fungi
- 3. Virus

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

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

Q12. Consider the following statements:

1. Adenoviruses have single-stranded DNA genomes whereas retroviruses have double-stranded DNA genomes.

2. Common cold is sometimes caused by an adenovirus whereas AIDS is caused by a retrovirus.

Which of the statements given above is/are correct?

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

Pre 2020

Q13. Which of the following statements are correct regarding the general difference between plant and animal cells?

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

Select the correct answer using the code given below:

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

Q14. In the context of recent advances in human reproductive technology, ‘Pronuclear Transfer’ is used for

- Fertilization of egg in vitro by the donor sperm
- Genetic modification of sperm producing cells
- Development of stem cells into functional embryos
- Prevention of mitochondrial diseases in offspring

Q15. What is the importance of using Pneumococcal Conjugate Vaccines in India?

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

Select the correct answer using the code given below:

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

Q16. Consider the following statements:

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

Which of the statements given above is/are correct?

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

Pre 2019

Q17. With reference to the recent developments in science, which one of the following statements is not correct?

- Functional chromosomes can be created by joining segments of DNA taken from cells of different species.
- Pieces of artificial functional DNA can be created in laboratories.
- A piece of DNA taken out from an animal cell can be made to replicate outside a living cell in a laboratory.
- Cells taken out from plants and animals can be made to undergo cell division in laboratory petri dishes.

Q18. ‘RNA interference (RNAi)’ technology has gained popularity in the last few years. Why?

- It is used in developing gene silencing therapies.
- It can be used in developing therapies for the treatment of cancer.
- It can be used to develop hormone replacement therapies.
- It can be used to produce crop plants that are resistant to viral pathogens.

Select the correct answer using the code given below.

- 1, 2 and 4
- 2 and 3
- 1 and 3
- 1 and 4 only

Q19. What is cas9 protein that is often mentioned in the news?

- A molecular scissors used in targeted gene editing.
- A biosensor used in the accurate detection of pathogens in patients.
- A gene that makes plants pest-resistant
- A herbicidal substance synthesized in generally modified crops

Q20. Which of the following statements is not correct?

- (a) Hepatitis B virus is transmitted much like HIV.
- (b) Hepatitis B, unlike Hepatitis C, does not have a vaccine.
- (c) Globally, the number of people infected with Hepatitis B and C viruses are several times more than those infected with HIV.
- (d) Some of those infected with Hepatitis B and C viruses do not show the symptoms for many years.

Pre 2018

Q21. With reference to the Genetically Modified mustard (GM mustard) developed in India, consider the following statements:

1. GM mustard has the genes of a soil bacterium that give the plant the property of pest-resistance to a wide variety of pests.
2. GM mustard has the genes that allow the plant cross-pollination and hybridization.
3. GM mustard has been developed jointly by the IARI and Punjab Agricultural University.

Which of the statements given above is/are correct?

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

Pre 2017

Q22. What is the application of Somatic Cell Nuclear Transfer Technology?

- (a) Production of biolarvicides
- (b) Manufacture of biodegradable plastics
- (c) Reproductive cloning of animals
- (d) Production of organisms free of diseases

Q23. With reference to agriculture in India, how can the technique of 'genome sequencing', often seen in the news, be used in the immediate future?

1. Genome sequencing can be used to identify genetic markers for disease resistance and drought tolerance in various crop plants.
2. This technique helps in reducing the time required to develop new varieties of crop plants.
3. It can be used to decipher the host-pathogen relationships in crops.

Select the correct answer using the code given below:

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

Pre 2016

Q24. In the context of the developments in Bioinformatics, the term 'transcriptome', sometimes seen in the news, refers to

- (a) A range of enzymes used in genome editing
- (b) The full range of mRNA molecules expressed by an organism
- (c) The description of the mechanism of gene expression
- (d) A mechanism of genetic mutations taking place in cells

Q25. Which of the following statements is/are correct? Viruses can infect

1. Bacteria
2. Fungi
3. Plants

Select the correct answer using the code given below.

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

Pre 2015

Q26. The Genetic Engineering Appraisal Committee is constituted under the

- (a) Food Safety and Standards Act, 2006
- (b) Geographical Indications of Goods (Registration and Protection) Act, 1999
- (c) Environment (Protection) Act, 1986
- (d) Wildlife (Protection) Act, 1972

Pre 2013

Q 27. Recombinant DNA technology (Genetic Engineering) allows genes to be transferred

- 1. Across different species of plants.
- 2. From animals to plants.
- 3. From microorganisms to higher organisms.

Select the correct Solution using the codes given below.

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