

PGT BIOTECHNOLOGY

1. Who launched the 90-day campaign 'Azadi Se Antyodaya Tak'?

- (A) Amit Shah
- (B) Piyush Goyal
- (C) Kiren Rijiju
- (D) Giriraj Singh

Correct Answer: (D)

2. Which country signed agreements on training staff and IT cooperation to deepen railway cooperation In Sep 2022?

- (A) Russia-India
- (B) Ukraine-Turkey
- (C) India-Bangladesh
- (D) America-India

Correct Answer: (C)

3. The “Donbas War” is currently being fought in

- (A) Serbia
- (B) Ukraine
- (C) Syria
- (D) Lebanon

Correct Answer: (B)

4. Pedagogy is the study of

- (A) education
- (B) learning process
- (C) teaching methods
- (D) guiding students

Correct Answer: (C)

5. Dyslexia is associated with

- (A) mental disorder
- (B) mathematical disorder
- (C) reading disorder
- (D) behavioural disorder

Correct Answer: (C)

6. Which government organizations will develop guidelines for the education of gifted children?

- (A) NCERT and NCFCS
- (B) NCERT and NCTE
- (C) NCERT and NTA
- (D) NCERT and SCERT

Correct Answer: (B)

7. The sugar found in DNA is _____

- (A) Ribose
- (B) Hexose
- (C) 2' deoxyribose
- (D) 3' deoxyribose

Correct Answer : (C)

8. Haploid content of human DNA is _____

- (A) 3.3×10^9 bp
- (B) 3.3×10^8 bp
- (C) 2.3×10^9 bp
- (D) 2.3×10^8 bp

Correct Answer : (A)

9. Which statement is correct regarding RNA differing from DNA?

- (A) RNA has guanine as nitrogen base
- (B) RNA is polynucleotide
- (C) RNA having additional –OH group present at 2' -position in the ribose
- (D) RNA having –H group present at 2' -position in the ribose

Correct Answer : (C)

10. Griffiths perform below given experiment I and II choose the appropriate outcome

- I) Heat-killed S strain bacteria was injected into mice
- II) Injected a mixture of heat-killed S and live R bacteria

- (A) I) Mice live II) Mice died
- (B) I) Mice dead II) Mice died
- (C) I) Mice live II) Mice live
- (D) I) Mice dead II) Mice live

Correct Answer : (A)

11. By which way DNA fragments is moved in agarose gel electrophoresis?

- (a) Larger fragments move slower and smaller fragments move faster
- (b) DNA fragments move from anode to cathode
- (c) Larger fragments move faster and smaller fragments move slower
- (d) DNA fragments move from cathode to anode

- (A) (a) and (b) are correct
- (B) (a) and (d) are correct
- (C) (b) and (c) are correct
- (D) (c) and (d) are correct

Correct Answer : (B)

12. After completion of human genome project, it was found out that _____ contains most genes and _____ contains fewest genes.

- (A) Chromosome 1 & Chromosome X
- (B) Chromosome 7 & Chromosome Y
- (C) Chromosome 1 & Chromosome Y
- (D) Chromosome 5 & Chromosome X

Correct Answer : (C)

13. Find out the correct recognition sequence for *EcoRI*

(A) 5' — AAATTT — 3'
3' — TTTAAA — 5'

(B) 5' — CTTAAG — 3'
3' — GAATTC — 5'

(C) 5' — GAATTC — 3'
3' — CTTAAG — 5'

(D) 5' — GAGCTC — 3'
3' — CTCGAG — 5'

Correct Answer : (C)

14. In Hershey and Chase experiment they used radioactive component to find out the genetic material. Below given choose correct pair of radioactive component used in experiment.

(A) ^{35}P – DNA & ^{32}S - Protein

(B) ^{35}P – Protein & ^{32}S - DNA

(C) ^{32}P – DNA & ^{35}S - Protein

(D) ^{32}P – Protein & ^{35}S - DNA

Correct Answer : (C)

15. Which criteria a molecule does have to be a genetic material?

i) It should be able to generate its replica

ii) It should be stable chemically and structurally

iii) It should provide the scope for slow changes (mutation) that are required for evolution

iv) It should be able to express itself in the form of 'Mendelian Characters

(A) i) & ii)

(B) i), ii) & iii)

(C) ii), iii) & iv)

(D) i), ii), iii) & iv)

Correct Answer : (D)

16. During the process of transcription 5'-TACGTACGTACG-3' is a coding strand. Then what will be the sequence of RNA transcribed?

- (A) 3'-ATGCATGCATGC-5'
- (B) 3'-AUGCAUGCAUGC-5'
- (C) 5'-CGTACGUACGUA-3'
- (D) 5'-UACGUACGUACG-3'

Correct Answer : (D)

17. Match the column

Column A		Column B	
a)	Retroviruses	i)	First native plasmid used for construction of first recombinant DNA
b)	<i>Agrobacterium tumifaciens</i>	ii)	Isolation of enzymes responsible for restriction
c)	<i>Salmonella typhimurium</i>	iii)	Cause cancer
d)	<i>Escherichia coli</i>	iv)	Pathogen of several dicot plants

- (A) (a-ii), (b-i), (c-iv), (d-iii)
- (B) (a-iii), (b-iv), (c-i), (d-ii)
- (C) (a-iii), (b-iv), (c-ii), (d-i)
- (D) (a-ii), (b-iii), (c-iv), (d-i)

Correct Answer : (B)

18. Match the column

Column A		Column B	
a)	Humoral immune response	i)	Respiratory tracts
b)	Allergy	ii)	Rheumatoid arthritis
c)	Auto-immune disease	iii)	IgE
d)	MALT	iv)	antibodies

- (A) a-iv), b-iii), c-ii), d-i)
- (B) a-iv), b-i), c-iii), d-ii)
- (C) a-ii), b-i), c-iv), d-iii)
- (D) a-iii), b-iv), c-ii), d-i)

Correct Answer : (A)

19. Choose the correct statement for type III endonucleases

- i) Two different enzymes which both recognize the same target sequence, which is symmetrical.
- ii) Recognize and methylates a single sequence but cleaves DNA up to 1000 bp away
- iii) One enzyme with two different subunits, one for recognition and modification and one for cleavage.
- iv) Recognizes and methylates same sequence but cleaves 24–26 bp away

- (A) i) & iv) is correct
 - (B) iii) & iv) is correct
 - (C) ii) & iii) is correct
 - (D) only iv) is correct
- Correct Answer : (B)

Case study Based Question:

Some of the applications of biotechnology in agriculture that you will study in detail are the production of pest resistant plants, which could decrease the amount of pesticide used. Bt toxin is produced by a bacterium called *Bacillus thuringiensis* (Bt for short). Bt toxin gene has been cloned from the bacteria and been expressed in plants to provide resistance to insects without the need for insecticides; in effect created a bio-pesticide. Examples are Bt cotton, Bt corn, rice, tomato, potato and soyabean etc. Bt Cotton: Some strains of *Bacillus thuringiensis* produce proteins that kill certain insects such as lepidopterans (tobacco budworm, armyworm), coleopterans (beetles) and dipterans (flies, mosquitoes). *B. thuringiensis* forms protein crystals during a particular phase of their growth.

These crystals contain a toxic insecticidal protein. Why does this toxin not kill the *Bacillus*? Actually, the Bt toxin protein exist as inactive protoxins but once an insect ingest the inactive toxin, it is converted into an active form of toxin due to the alkaline pH of the gut which solubilise the crystals. The activated toxin binds to the surface of midgut epithelial cells and create pores that cause cell swelling and lysis and eventually cause death of the insect.

20. *Bacillus thuringiensis* bacterium produces

- (a) Bh toxin
- (b) Bb toxin
- (c) Bt toxin
- (d) Bs toxin

Correct Answer:(C)