

Chapter – 10 | Biotechnology and Its Applications

QUIZ-01

1. Plants regenerated from a single explant through tissue culture are called:
- A. Hybrids
 - B. Somaclones
 - C. Transgenic plants
 - D. Mutants
- (B)

Explanation : Plants produced through micropropagation from a single parent plant are genetically identical and called somaclones.

2. The ability of a plant cell to develop into a complete plant is called:
- A. Differentiation
 - B. Totipotency
 - C. Transformation
 - D. Transduction
- (B)

Explanation : Totipotency is the capacity of a plant cell/explant to regenerate into a whole plant under suitable conditions.

3. Bt toxin is produced by:
- A. Bacillus subtilis
 - B. Bacillus thuringiensis
 - C. Agrobacterium tumefaciens
 - D. Rhizobium
- (B)

Explanation : Bacillus thuringiensis produces Bt toxin proteins used for insect-resistant crops.

4. Bt toxin becomes active inside the insect due to:
- A. Acidic pH of insect gut
 - B. Neutral pH of insect gut
 - C. Alkaline pH of insect gut
 - D. High temperature of insect body
- (C)

Explanation : The inactive protoxin is converted into active toxin in the alkaline environment of the insect gut.

5. Golden rice is genetically modified to increase the content of:
- A. Vitamin C
 - B. Vitamin A
 - C. Vitamin D
 - D. Vitamin B12
- (B)

Explanation : Golden rice is enriched with Vitamin A precursor (β -carotene).

6. Human insulin produced through recombinant DNA technology was developed by:
- A. Pfizer
 - B. Eli Lilly
 - C. Fleming Laboratories
 - D. Roche
- (B)

Explanation : In 1983, Eli Lilly produced human insulin by introducing insulin gene sequences into E. coli plasmids.

7. The first clinical gene therapy was given for the treatment of:
- A. Diabetes
 - B. ADA deficiency
 - C. Cancer
 - D. Cystic fibrosis
- (B)

Explanation : The first gene therapy trial in 1990 treated a child suffering from adenosine deaminase (ADA) deficiency.

8. PCR is used in molecular diagnosis because it can:
- A. Destroy pathogens directly
 - B. Amplify very small amounts of nucleic acid
 - C. Produce antibodies
 - D. Remove defective genes
- (B)

Explanation : PCR amplifies DNA sequences, allowing detection of pathogens even when present in very low amounts.

9. Animals having foreign genes introduced into their DNA are called:
- A. Hybrid animals
 - B. Cloned animals
 - C. Transgenic animals
 - D. Mutant animals
- (C)

Explanation : Transgenic animals contain and express an extra foreign gene introduced through genetic engineering.

10. GEAC is related to:
- A. Production of antibiotics
 - B. Regulation of GM research and organisms
 - C. DNA replication
 - D. Vaccine production
- (B)

Explanation : Genetic Engineering Approval Committee (GEAC) evaluates the validity and safety of GM research and GM organism release.