

# BIOTECHNOLOGY - AND ITS APPLICATION

## IMPORTANT ONE LINERS

- ① → Agro-chemical based agriculture, organic agriculture, Genetically engineered crop-based agriculture help increase food production.
- ② → Pest Resistant crops reduce the use of chemical pesticides.
- ③ → Some strains of **Bacillus thuringiensis** have proteins that kill insects like beetles, dipterans.
- ④ → **B. thuringiensis** forms a toxic insecticidal protein (Bt-toxin) crystal during a particular phase of their growth.
- ⑤ → Bt-toxin genes were isolated from **B. thuringiensis** and incorporated into crop plants such as cotton.
- ⑥ → A nematode **Meloidogyne incognita** infects the roots of tobacco plants and causes a great reduction in yield.
- ⑦ → **RNA interference** strategy is used to prevent this infestation.
- ⑧ → Parasite cannot survive in a transgenic host expressing specific interfering RNA.
- ⑨ → Management of adult-onset diabetes is possible by taking insulin at regular time intervals.
- ⑩ → Insulin consists of two short polypeptide chains that are linked together by disulphide bridges.
- ⑪ → The pro-hormone contains an extra stretch called **C Peptide**.
- ⑫ → Gene therapy is a method to correct a gene defect diagnosed in a child/embryo.
- ⑬ → First clinical gene therapy was given in **1990** to a 4 year old girl with **adenosine deaminase deficiency**.
- ⑭ → If ADA gene is introduced into cells at early embryonic stages, it could be a permanent cure.

- (15) → **Recombinant DNA** technology, PCR and Enzyme Linked Immuno-sorbent Assay [ELISA] are some techniques for **early diagnosis**.
- (16) → **PCR** is used to detect **HIV** in suspected AIDS patients.
- (17) → **ELISA** is based on the principle of **antigen-antibody interactions**.
- (18) → Over **95%** of all existing transgenic animals are mice.
- (19) → **Human protein** ( $\alpha$ -1-antitrypsin) used to treat emphysema products for treatment of phenylketonuria and cystic fibrosis are the biological products obtained from transgenic animals.
- (20) → **ROSBIE** → first transgenic cow.
- (21) → Indian Government has set up organizations like **GEAC** [genetic engineering approval committee]
- (22) → **BIOPIRACY** is the use of bio-resources by multinational companies and the other organizations without proper authorization.