

1. When the genotype of an organism is improved by the addition of foreign gene, the process is called
  - (a) Tissue culture
  - (b) Genetic diversity
  - (c) Genetic engineering
  - (d) Plastic surgery
  
2. The tumour inducing capacity of *Agrobacterium tumefaciens* is located in large extrachromosomal plasmid and called -
  - (a) Ti - plasmid
  - (b) Ri - plasmid
  - (c) Lambda phage
  - (d) Plasmid P<sup>BR322</sup>
  
3. Taq - polymerase which is used for amplification of DNA related with : -
  - (a) Hybridoma technique
  - (b) PCR - technique
  - (c) Gene cloning
  - (d) r - DNA technology
  
4. Which one of the following has found extensive use in genetic engineering work in plants
  - (a) *Bacillus coagulans*
  - (b) *Agrobacterium tumefaciens*.
  - (c) *Clostridium septicum*
  - (d) *Xanthomonas citri*
  
5. The Ti plasmid, is often used for making transgenic plants. This plasmid is found in : -
  - (a) Yeast as a 2 tim plasmid
  - (b) *Azotobacter*
  - (c) *Rhizobium* of the roots of leguminous plants
  - (d) *Agrobacterium*
  
6. PCR - Technique is used in : -
  - (a) Production of transgenic microbes
  - (b) Production of genetically modified food
  - (c) Forensic investigation
  - (d) r - DNA technique
  
7. Function of restriction endonuclease enzyme is :
  - (a) Useful in genetic engineering
  - (b) Protects the bacterial DNA against foreign DNA
  - (c) Helpful in transcription
  - (d) Helpful in protein synthesis
  
8. A bacterium modifies its DNA by adding methyl groups to the DNA, It does so to : -
  - (a) Clone its DNA
  - (b) Be able to transcribe many genes simultaneously
  - (c) Turn its gene on
  - (d) Protect its DNA from its own restriction enzyme
  
9. More advancement in genetic engineering is due to : -
  - (a) Restriction endonuclease
  - (b) Reverse transcriptase

- (c) Protease
- (d) Zymase

10. What is *true* of plasmid?

- (a) Found in viruses
- (b) Contains genes for vital activities
- (c) Part of nuclear chromosome
- (d) Widely used in gene transfer

11. What is the source of the Ti (Tumor inducing) plasmid which is modified and used as a cloning vector to deliver the desirable genes into plant cells?

- (a) *Agrobacterium tumifaciens*
- (b) *Thermophilusaquaticus*
- (c) *Pyrococcus furiosus*
- (d) *Aedesaegypti*

12. In the PCR technology the DNA segment is replicated over a billion times. This repeated replications catalyzed by the enzyme :-

- (a) DNA polymerase
- (b) Taq polymerase
- (c) DNA dependent RNA polymerase
- (d) Primase

13. Restriction enzyme Eco RI cuts the DNA between bases G and A only when the sequence in DNA is: -

- (a) GATATC
- (b) GAATTC
- (c) GATTCC
- (d) GAACIT

14. According to EFB, "The integration of natural science and organisms, cells, parts thereof and molecular analogues for products and services is known as -

- (a) Biochemistry
- (b) Bioinformatics
- (c) Biotechnology
- (d) Biology

15. In gel electrophoresis, at which end of the gel the sample is loaded?

- (a) In the wells
- (b) Towards positive electrode
- (c) Towards negative electrode
- (d) 1 & 3 both

16. In which type of bioreactor air bubbles dramatically increases the oxygen transfer area?

- (a) Simple stirred tank bioreactor
- (b) Sparged stirred tank bioreactor
- (c) Both 1&2
- (d) None of these

17. In nematode resistance by RNA interference, some specific genes were introduced which form dsRNA. These were introduced in -

- (a) Nematode

- (b) Host plant
- (c) Agrobacterium
- (d) All of these

18. Restriction endonucleases are used in genetic engineering to form

- (a) Recombinant molecule of protein
- (b) Recombinant molecule of DNA
- (c) Recombinant molecule of protein & DNA
- (d) Recombinant cell

19. Which of following feature is not necessary for cloning vector -

- (a) Origin of replication
- (b) High copy number
- (c) Selectable marker
- (d) Cloning sites

20. Second letter of the name of restriction endonuclease came from the

- (a) Genus of organism
- (b) Species of organism
- (c) Family of organism
- (d) Class of organism

21. In presence of chromogenic substrate recombinant bacteria gives

- (a) Red coloured colonies
- (b) Colourless colonies
- (c) Blue colonies
- (d) Green colonies

22. The substrate for restriction enzyme is -

- (a) Single stranded RNA
- (b) Proteins
- (c) Double stranded DNA
- (d) Single stranded DNA

23. pBR - 322 which is frequently used as a vector for cloning gene is -

- (a) an original bacterial plasmid
- (b) a modified bacterial plasmid
- (c) a viral genome
- (d) a transposon

24. Transgenic bacteria are being used for producing

- (a) Epinephrine
- (b) Human insulin
- (c) Thyroxine
- (d) Cortisol

25. The decisions regarding the validity of genetic modification research and the safety of introducing genetically modified organisms for public services in India is taken by -

- (a) National biotechnology board (NBTB)
- (b) Department of biotechnology (DBT)
- (c) Department of science and technology (DST)
- (d) Genetic engineering approval committee (GEAC)

26. Interferon is

- A. antimalarial
- B. antifungal

- C. antiviral                      D. anticancer  
(a) A, B      (b) B, C      (c) C, D      (d) A, B, C, D

**27. Column I**

**Column II**

- |                        |  |
|------------------------|--|
| 1. Biopiracy           | A. Gene therapy                            |
| 2. Retroviral vector   | B. Ellegal removal of biological Materials |
| 3. Biopatent           | C. Right granted for biological entities   |
| 4. Kohler and Milstein | D. Monoclonal antibody                     |

- (a) I – B, II – A, III – D, IV – C  
(b) I – B, II – A, III – C, IV – D  
(c) I – B, II – C, III – A, IV – D  
(d) I – D, II – A, III – B, IV – C

**28.** Production of a human protein in bacteria by genetic engineering is possible because

- (a) Bacterial cell can carry out the RNA splicing reactions  
(b) The mechanism of gene regulation is identical in humans and bacteria  
(c) The human chromosome can replicate in bacterial cell  
(d) The genetic code is universal

**29.** Which of the following tools of recombinant DNA technology is incorrectly paired with its use -

- (a) restriction enzyme - Production of RFLPs  
(b) DNA ligase - that cuts DNA, creating the sticky ends  
(c) DNA polymerase - used in a polymerase chain reaction to amplify section of DNA  
(d) reverse transcriptase - production of cDNA from mRNA

**30.** An example of gene therapy is

- (a) Production of injectable Hepatitis - B vaccine  
(b) Production of vaccines in food crops like potatoes which can be eaten  
(c) Introduction of gene for adenosine deaminase in persons suffering from severe combined immuno - deficiency (SCID)  
(d) Production of test tube babies by artificial insemination and implantation of fertilized eggs

1. (c)
2. (a)
3. (b)
4. (b)
5. (d)
6. (c)
7. (b)
8. (d)
9. (a)
10. (d)
11. (a)
12. (b)
13. (b)
14. (c)
15. (d)
16. (b)
17. (b)
18. (b)
19. (b)
20. (b)
21. (b)
22. (c)
23. (b)
24. (b)
  
25. (d)
  
26. (c)
  
27. (b)
  
28. (d)
29. (b)
30. (c)