

## EXERCISE

1. Who isolated the first restriction endonucleases :-  
 (1) Temin & Baltimore    (2) Sanger  
 (3) Smith                    (4) Paul berg
2. Which vector is commonly used in the transfer of gene in a crop plant -  
 (1) Plasmids of *B. Subtilis*  
 (2) Bacteriophages  
 (3) Ti-plasmids of *Agrobacterium*  
 (4) *E. Coli* Phages
3. The tumour inducing capacity of *Agrobacterium tumefaciens* is located in large extrachromosomal plasmid and called -  
 (1) Ti - plasmid  
 (2) Ri - plasmid  
 (3) Lambda phage  
 (4) Plasmid P<sup>BR 322</sup>
4. What is true for plasmid :-  
 (1) Plasmids are widely used in gene transfer  
 (2) These are found in virus  
 (3) Plasmid contains gene for vital activities  
 (4) These are main part of chromosome
5. Manipulation of DNA in genetic engineering became possible due to the discovery of :-  
 (1) Restriction endonuclease  
 (2) DNA ligase  
 (3) Transcriptase  
 (4) Primase
6. Restriction enzymes  
 (1) Are endonucleases which cleave DNA at specific sites  
 (2) Make DNA complementary to an existing DNA or RNA  
 (3) Cut or join DNA fragments  
 (4) Are required in vectorless direct gene transfer.
7. Which of the following is the example of direct gene transfer :-  
 (1) Microinjection  
 (2) Electroporation  
 (3) Particle gun  
 (4) All the above
8. PCR-technique is used in :-  
 (1) Production of transgenic microbes  
 (2) Production of genetically modified food  
 (3) Forensic investigation  
 (4) r-DNA technique
9. Function of restriction endonuclease enzyme is :  
 (1) Useful in genetic engineering  
 (2) Protects the bacterial DNA against foreign DNA  
 (3) Helpful in transcription  
 (4) Helpful in protein synthesis
10. Electroporation procedure involves :  
 (1) Fast passage of food through sieve pores in phloem elements with the help of electric stimulation.  
 (2) Opening of stomatal pores during night by artificial light  
 (3) Making transient pores in the cell membrane to introduce gene constructs  
 (4) Purification of saline water with the help of a membrane system.
11. A bacterium modifies its DNA by adding methyl groups to the DNA, It does so to :-  
 (1) Clone its DNA  
 (2) Be able to transcribe many genes simultaneously  
 (3) Turn its gene on  
 (4) Protect its DNA from its own restriction enzyme
12. ***Agrobacterium tumefaciens*** contains a large plasmid, which induces tumour in the plants it is termed as-  
 (1) Ti plasmid  
 (2) Ri plasmid  
 (3) Recombinant plasmid  
 (4) Shine Delgrano sequence
13. Which of the following enzyme is used to join DNA fragments :-  
 (1) Terminase  
 (2) Endonuclease  
 (3) Ligase  
 (4) DNA polymerase
14. A suitable vector for gene cloning in higher organism is  
 (1) Baculovirus  
 (2) Retrovirus  
 (3) *Salmonella typhimurium*  
 (4) *Neurospora crassa*

- 15.** PCR proceeds in three distinct steps governed by temperature they are in order of :-  
 (1) Denaturation, Annealing, Synthesis  
 (2) Synthesis, Annealing, Denaturation  
 (3) Annealing, Synthesis, Denaturation  
 (4) Denaturation, Synthesis, Annealing
- 16.** 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?  
 (1) *Agrobacterium tumifaciens*  
 (2) *Thermophilus aquaticus*  
 (3) *Pyrococcus furiosus*  
 (4) *Aedes aegypti*
- 17.** The term "molecular scissors" generally refers to :-  
 (1) DNA polymerases  
 (2) RNA polymerases  
 (3) Restriction endonucleases  
 (4) DNA ligases
- 18.** Cohen and Boyer isolated an antibiotic resistance gene, by cutting out a piece of DNA from a plasmid which was responsible for conferring antibiotic resistance, in the year :-  
 (1) 1962 (2) 1965 (3) 1972 (4) 1982
- 19.** According to EFB, "The integration of natural science and organisms, cells, parts thereof and molecular analogues for products and services," is known as-  
 (1) Biochemistry (2) Bioinformatics  
 (3) Biotechnology (4) Biology
- 20.** The stickiness of DNA ends facilitates the action of which enzyme -  
 (1) DNA polymerase  
 (2) DNA Ligase  
 (3) Restriction endonuclease  
 (4) Alkaline phosphatase
- 21.** Which technique is used to check the progression of restriction enzyme digestion-  
 (1) PCR (2) Gel electrophoresis  
 (3) Southern Blotting (4) Staining
- 22.** In gel electrophoresis, at which end of the gel the sample is loaded?  
 (1) In the wells  
 (2) Towards positive electrode  
 (3) Towards negative electrode  
 (4) 1 & 3 both
- 23.** An antibiotic resistance gene of plasmid vector which get inactivated due to insertion of alien DNA, helps in the selection of-  
 (1) Transformants (2) Recombinants  
 (3) Non-Transformants (4) 2 & 3 both
- 24.** In EcoRI, R is stand for  
 (1) Strain (2) Species  
 (3) Genus (4) Order
- 25.** Which instrument is used for the separation of DNA fragments -  
 (1) PCR  
 (2) Gel electrophoresis  
 (3) Bioreactor  
 (4) Restriction endonuclease
- 26.** Which of following feature is not necessary for cloning vector-  
 (1) Origin of replication (2) High copy number  
 (3) Selectable marker (4) Cloning sites
- 27.** Transformation is a procedure through which -  
 (1) A piece of DNA is introduced in a host bacterium  
 (2) A piece of DNA is introduced in a vector  
 (3) A piece of DNA is introduced from protein  
 (4) All
- 28.** To isolate DNA from fungi we have to break the wall. This is done by  
 (1) Lysozyme (2) Cellulose  
 (3) Invertase (4) Chitinase
- 29.** Which of the following enzyme will get inactivated in insertional inactivation  
 (1) Transacetylase (2) Permease  
 (3)  $\beta$ -galactosidase (4) Taq-polymerase
- 30.** Which of the following is not required in PCR -  
 (1) DNA primer (2) DNA template  
 (3) RNA primer (4) Taq polymerase
- 31.** In recombinant DNA technology, the term vectors refers to -  
 (1) the enzyme that cuts DNA into restriction fragments  
 (2) the sticky end of a DNA fragment  
 (3) a plasmid used to transfer DNA into a living cell  
 (4) a DNA probe used to identify a particular gene
- 32.** pBR-322 which is frequently used as a vector for cloning gene is-  
 (1) an original bacterial plasmid  
 (2) a modified bacterial plasmid  
 (3) a viral genome  
 (4) a transposon

- 33.** Genetically engineered bacteria have been used in commercial production of  
 (1) Thyroxin (2) Testosterone  
 (3) Human insulin (4) Melatonium
- 34.** The prerequisites for biotechnological production of antibiotics is  
 (1) To search an antibiotic producing microorganism  
 (2) To isolate the antibiotic gene  
 (3) To join antibiotic gene with E.coli plasmid  
 (4) All of the above
- 35.** Transgenic animal has  
 (1) Foreign DNA is all its cells  
 (2) Foreign RNA is all its cells  
 (3) Foreign DNA is some of the cells  
 (4) Both 2 and 3
- 36.** The protein products of the following Bt toxin genes *cryIAC* and *cryIIAb* are responsible for controlling:-  
 (1) Bollworm (2) Roundworm  
 (3) Moth (4) Fruit fly
- 37.** A transgenic rice (Golden rice) has been developed for increased content of :-  
 (1) Vitamin A (2) Viamin B<sub>1</sub>  
 (3) Vitamin C (4) Vitamin D
- 38.** During the processing of the prohormone "proinsulin" into the mature "insulin"  
 (1) C-peptide is added to proinsulin  
 (2) C-peptide is removed from proinsulin  
 (3) B-peptide is added to proinsulin  
 (4) B-peptide is removed from proinsulin
- 39.** First transgenic plant :-  
 (1) Potato (2) Tomato  
 (3) Tobacco (4) Maize
- 40.** Cultivation of Bt cotton has been much in the news. The prefix "Bt" means :-  
 (1) "Barium – treated" cotton seeds.  
 (2) "Bigger thread" variety of cotton with batter tensile strength.  
 (3) Produced by "biotechnology" using restriction enzymes and ligases.  
 (4) Carrying an endotoxin gene from *Bacillus thuringiensis*.
- 41.** Cry-gene which synthesizes crystal protein isolated from :-  
 (1) *Bacillus thuriengensis* (2) *Rhizobium*  
 (3) *Bacillus polymyxa* (4) *Clostridium*
- 42.** ***Bacillus thuringiensis*** (Bt) strains have been used for designing novel –  
 (1) Bioinsecticidal plants  
 (2) Bio–mineralization processes  
 (3) Biofertilizers  
 (4) Bio–metallurgical techniques
- 43.** Bt–cotton is resistant for :-  
 (1) Round–worm (2) Fluke–worm  
 (3) Boll–worm (4) Pin–worm
- 44.** The C-peptide is  
 (1) not present in proinsulin  
 (2) present in mature insulin  
 (3) removed during maturation of insulin  
 (4) also present in artificial insulin
- 45.** GEAC makes decisions regarding  
 (1) the validity of GM research  
 (2) the safety of introducing GM organisms for public services  
 (3) the validity of biopatents  
 (4) more than one options are correct
- 46.** The use of bio-resources by multinational companies & other organisations without proper authorisation from the countries & people concerned, is known as –  
 (1) Biopatent (2) Biopiracy  
 (3) Biowar (4) Biodiversity
- 47.** The Indian parliament has recently cleared which amendment of the Indian patents bill.  
 (1) 1<sup>st</sup> (2) 2<sup>nd</sup> (3) 3<sup>rd</sup> (4) 4<sup>th</sup>

**ANSWER KEY**

<b>Que.</b>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<b>Ans.</b>	3	3	1	1	1	1	4	3	2	3	4	1	3	2	1
<b>Que.</b>	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
<b>Ans.</b>	1	3	3	3	2	2	4	2	1	2	2	1	4	3	3
<b>Que.</b>	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
<b>Ans.</b>	3	2	3	4	1	1	1	2	3	4	1	1	3	3	4
<b>Que.</b>	46	47													
<b>Ans.</b>	2	2													