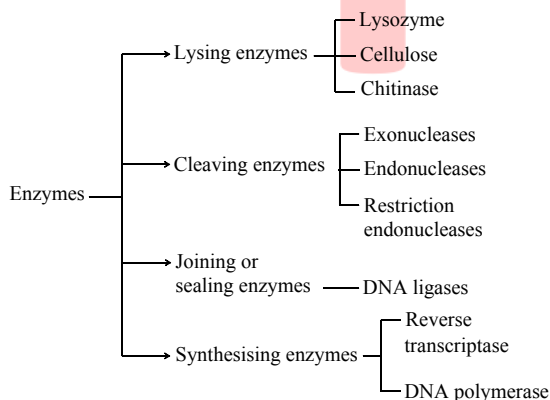


Topic :- Biotechnology Principles & Processes

- 2 (a)
The most important feature in a plasmid to be used as a vector is origin of replication (*Ori*).
Origin of replication is a specific sequence of DNA bases which is responsible for initiating replication. A prokaryotic DNA has a single origin of replication while eukaryotic DNA may have more than one origin of replication

- 3 (c)
DNA gyrase, the enzyme that participates in the process of DNA replication is a type of DNA topoisomerase

- 5 (d)
Three types of 'biological tool' are used in the formation of recombinant DNA



- (ii) Cloning vectors (vehicle vectors)
(iii) Complementary host (for transformation with recombinant DNA)

- 8 (d)
In recent times PCR is being used in the detection of HIV (Virus of AIDS). By using PCR phenylketonuria, muscular dystrophy, sickle-cell anaemia, hepatitis, chlamydia and tuberculosis also can be diagnosed

- 9 **(a)**
Agarose is extracted from sea weeds. It is a polysaccharide. In gel electrophoresis, DNA fragments separate according to size through the pores of agarose gel
- 10 **(d)**
DNA polymerase remains active at high temperature. Usually *Taq* DNA polymerase, isolated from a thermophilic bacterium *Thermus aquaticus*, is used in most of the cases
- 12 **(a)**
The science of biotechnology is based mainly on two core technologies
(i) **Genetic engineering**, which is the manipulation of genes by man. It includes techniques to alter the nature of genetic material (DNA and RNA), to introduce these into host organisms and thus, change the phenotype of the host organism
(ii) **Biochemical engineering**, *i.e.*, processes that help the growth of desired microbe/eukaryotic cell in large quantities in a sterile medium for the manufacture and multiplication of biotechnological product
- 13 **(c)**
Each bioreactor has a cylindrical stirred-tank to facilitate the mixing of contents. The stirrer provides facility of mixing the contents as well as availability of oxygen throughout the process
- 15 **(b)**
Taq DNA polymerase is a thermostable enzyme, isolated from a *Thermophilic bacterium, Thermus aquaticus*
- 18 **(a)**
A sparged stirred-tank bioreactor being stirred at 200 RPM
- 20 **(b)**
The Polymerase Chain Reaction (PCR) is a technique by which small samples DNA can be quickly amplified. Starting with only one gene sized pieces of DNA, this technique is used to make literally billions of copies in only a few hours

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	A	A	C	A	D	D	B	D	A	D
Q.	11	12	13	14	15	16	17	18	19	20
A.	B	A	C	C	B	D	A	A	D	B

PE