

Topic :- Biotechnology Principles & Processes

- 2 **(b)**
Retroviruses in animals including humans are able to change normal cells into cancerous cell
- 4 **(c)**
pBR322 vector was the first artificial cloning vector constructed in 1977 by Boliver and Rodriquez. It is widely used in gene cloning experiments in pBR322
p – Denotes that it is plasmid
BR – stands for Boliver and Rodriquez who constructed this plasmid
322 is a number given to distinguish this plasmid from others developed in the same laboratory
- 5 **(a)**
Genetic engineering is defined as the modification of genetic information of living organism by direct manipulation of their DNA. Thus, a gene of known function (economic importance) can be transferred from its normal location into a cell *via* a suitable mobile genetic element called vector such as plasmid, phage, etc.
- 7 **(a)**
Recombinant DNA having integrated fragment of antibiotic resistant gene
- 8 **(a)**
True. In plants, the tumour inducing plasmid (Ti) of *Agrobacterium tumefaciens* is used as a cloning vector
- 9 **(c)**
Gene encoding resistance to antibiotics like ampicillin, chloramphenicol, tetracycline or Kanamycin, are useful selectable markers for *E.coli*. The normal *E.coli* cells do not carry resistance against any of these antibiotics

- 12 **(d)**
Proteins are removed by treatment with protease
- 13 **(c)**
Plasmids, cosmids or bacteriophages can be used as vector in genetic engineering. Plasmids are most widely used circular, extrachromosomal DNA segments seen in the bacterial cells. They carry a foreign gene or desired gene to the host. The size of plasmids ranges from 1×10^6 to 200×10^6 daltons
- 14 **(c)**
Both are true, *Ori* also controls the copy numbers of the linked DNA
If a foreign DNA ligates at the *Bam* HI site tetracycline resistance gene in the vector pBR322, the recombinant plasmid loses the tetracycline
- 18 **(d)**
After the formation of the product in the bioreactors, it undergoes through some processes before a finished product to be ready for marketing. *The processes include* (i) separation and (ii) purification of product which are collectively called the downstream processing
The product is subjected to quality control testing and kept in suitable preservatives. If drugs are to be manufactured such formulation has to undergo through clinical trials. A proper quality control testing for each product is also needed. The downstream processing and quality control test are different from product to product
- 19 **(a)**
Endonucleases are enzymes that produce internal cuts called cleavage DNA molecule. A class of endonucleases cleavage DNA only within or near those sites which have specific base sequences, such endonucleases are known as restriction endonucleases and sites recognized by them are called recognition sites. Restriction endonucleases have major role in genetic engineering
- 20 **(b)**
Plasmid is an extrachromosomal genetic of DNA that is capable of replicating independently of

host chromosome. It forms the basis of many cloning vectors used in genetic engineering

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

PE