

# QB365 Question Bank Software Study Materials

## Botany - Principles and Processes of Biotechnology Important 2 Marks Questions With Answers (Book Back and Creative)

12th Standard

Biology

Total Marks : 40

2 Marks

20 x 2 = 40

1) What are the materials used to grow microorganism like Spirulina?

**Answer :** Spirulina can be grown easily on materials like waste water from potato processing plants (containing starch), straw, molasses, animal manure and even sewage, to produce large quantities.

2) What are the enzymes you can use to cut terminal end and internal phospho di ester bond of nucleotide sequence?

**Answer :** Restriction endonuclease. e.g: Hind II, EcoR I, PvuII, Bam H I, Taq I.

3) Name the chemicals used in gene transfer.

**Answer :** Polyethylene Glycol (PEG) and Dextran Sulphate.

4) Mention any two bacterial species used as SCP.

**Answer :** (1) Cellulomonas  
(2) Alcaligenes

5) What is a palindrome sequence?

**Answer :** Palindrome is a sequence of nucleotide in DNA strands at the site which reads the same in 5'- 3' direction and in the 3'-5' direction.

6) Write a palindrome sequence of DNA.

**Answer :** 5' CATTATATAATG 3'  
3' GTAATATATTAC 5'

7) Differentiate between flush end and cohesive end of DNA.

**Answer :**

Flush End	Cohesive End
Some restriction enzymes cut the strands of DNA through the centre resulting in blunt end or flush end or symmetric cuts.	Some restriction enzymes cut the strands in a way producing protruding and recessed ends known as cohesive end or sticky end or asymmetric cuts.

8) Classify vectors and explain them.

**Answer :** Vectors are of two types:

i) Cloning Vector, and

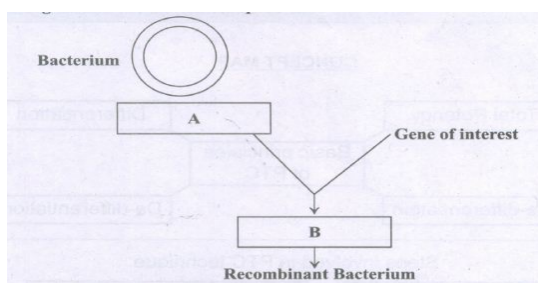
ii) Expression Vector. Cloning vector is used for the cloning of DNA insert inside the suitable host cell. Expression vector is used to express the DNA insert for producing specific protein inside the host.

9) Write a brief note on BAC vector.

**Answer :** Bacterial Artificial Chromosome (BAC) Vector is a shuttle plasmid vector, created for cloning large-sized foreign DNA. BAC vector is one of the most useful cloning vectors in r-DNA technology they can clone DNA inserts of up to 300 Kb and they are stable and more user-friendly.

10) Observe the given flow chart and complete it.

**Answer :**



- A. Plasmid
- B. rDNA / chimeric DNA

11) Name the products of the following combinations.

- (a) Bacterial plasmid + cos - site = \_\_\_\_\_
- (b) Bacterial plasmid + phage DNA = \_\_\_\_\_

**Answer :** (a) Cosmid  
(b) Phagemid

12) How do DNA ligases join the DNA fragments?

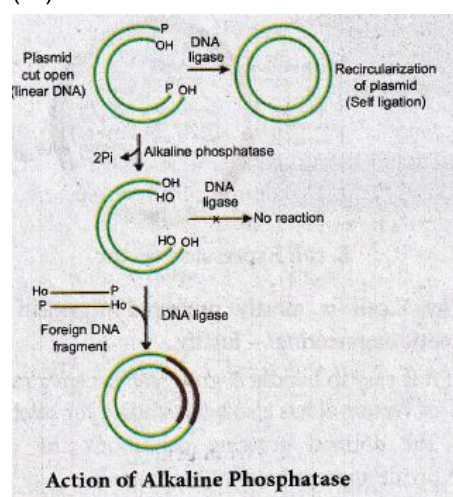
**Answer :** DNA ligase joins the sugar and phosphate molecule of double stranded DNA (ds.DNA) with 5' phosphate and 3-OH in an ATP - dependent reaction

13) What is the main function of a selectable marker?

**Answer :** Selectable marker, which helps in identifying and eliminating nontransformants. It will selectively permit the growth of the transformants.

14) Explain the action of alkaline phosphatase.

- Answer :** (i) It is a DNA modifying enzyme & adds or removes specific phosphate groups at the 5' terminus of double stranded DNA or single stranded DNA or RNA.  
(ii) It prevents self ligation.  
(iii) It is obtained from bacteria & calf intestine.



15) What is meant by electrophoresis?

**Answer :** It is a separating technique used to separate different biomolecules with positive and negative charges.

16) Define western blot.

**Answer : Western Blot**

- (i) Refers to the electrophoretic transfer of proteins to blotting papers.
- (ii) Nitrocellulose filter paper can be used for western blot technique.
- (iii) A particular protein is then identified by probing the blot with a radio-labelled antibody which binds on the specific protein to which the antibody was prepared.

17) Explain Northern Blot.

**Answer : Northern Blot**

- (i) It was found that RNA is not binding to cellulose nitrate.
- (ii) Therefore, Alwin et al. (1979) devised a procedure in which RNA bands are transferred from the agarose gel into nitrocellulose filter paper.
- (iii) This transfer of RNA from gel to special filter paper is called Northern Blot hybridization.
- (iv) The filter paper used for Northern blot is Amino Benzyloxymethyl Paper which can be prepared from What man 540 paper.

18) Define transcription.

**Answer :** Transcription refers to the copying of genetic information from one strand of the DNA by RNA.

19) What is RNA interference?

**Answer :** (i) It is a biological process in which RNA molecules inhibit gene expression or translation.

(ii) This is done by neutralising targeted mRNA molecules.

20) *Agrobacterium tumefaciens* is a good vector in gene transfer. State the reason for it.

**Answer :** (i) Naturally ability to transfer T-DNA region its plasmid into plant genome.

(ii) T-DNA of Ti-Plasmid is stably integrated with plant DNA.