

**TELANGANA UNIVERSITY**  
**S.S.R. DEGREE COLLEGE, NIZAMABAD (C.C:5029)**  
**IV SEMESTER INTERNAL ASSESSMENT-II EXAMINATIONS**  
**DEPARTMENT OF BOTANY**  
**(Paper –IV, Plant Molecular Biology, and Genetic Engineering)**  
**QUESTION BANK**

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**I. Multiple Choice Questions**

1. Polymorphisms are simply variations in the length of ( )  
a) RNA fragments    b. DNA fragments    c. Mitochondria    d. Ribosome
2. The *Arabidopsis thaliana* genome makes it possible to construct complete physical maps for ( )  
a) 5 chromosomes    b. 10 chromosomes    c. 15 chromosomes    d. 25 chromosomes
3. PCR is a cell free amplification technique for ( )  
a) Synthesizing multiple identical copies    b. Systematic multiple identical copies  
c. Synthetic multiple identical copies    d. Simulative multiple identical copies
4. *Thermusaquaticus* is the source of ( )  
a.Taq polymerase    b. Vent polymerase    c. DNA polymerase-III    d. RNA polymerase-III
5. Reverse transcriptase PCR uses ( )  
a.mRNA as a template to from cDNA    b. RNA as a template to from DNA  
c. mRNA as a template to from DNA    d. RNA as a template to from cDNA
6. HarGobind Khorana DNA synthesis method is ( )  
a. Diester method    b. Phosporamidite method    c. Phospodiester method    d. All of these
7. The basic haploid chromosome set of an individual genes is ( )  
a. Genome    b. Plerome    c. Codon    d. Plasmid
8. RAPD can be used for identification of ( )  
a. Somatic hybrids    b. Genome mapping  
c. Genetic resources    d. monocytogenes
9. ESTs stands for ( )  
a. Expressed Sequence Tags    b. Extracted Sequence Tags  
c. Experienced Sequence Tags    d. Experiment Sequence Tags
10. A labeled molecule used in hybridization technique is ( )  
a. Probe    b. Primer    c. Template    d. Fragment
11. Who is considered the father of genetic engineering? ( )  
A. James watson    B. Francis crick  
C. Paul berg    D. Gregor mendel.

12. The first genetically modified organism (GMO) was created in 1970's. what was it ( )  
A. Bacteria    B. mouse    C. Corn    D. Yest
13. What is the function of restriction enzymes in genetic engineering ? ( )  
A. Copy DNA    B. Cut dna at specific sequences  
C. Amplify DNA    D. Join DNA Fragments
14. In which year was the CRISPR – cas 9 gene editing system first demonstrated in human cells ? ( )  
A. 2005    B. 2012    C. 1998    D. 1983
15. What is the Primary role of ligase in genetic engineering ? ( )  
A. Cut DNA at specific sequences    B. Join DNA fragments  
C. Copy DNA    D. Amplity DNA
16. Which Nobel laureate was involved in the development of the polymerase chain reaction (PCR) ? ( )  
A. James Watson    B. Kary mullis  
C. Francis crick    D. Barbara meelintock.
17. What is the purpose of gel electrophoresis in genetic engineering ? ( )  
A. Amplify DNA    B. Separate and analyze DNA Fragments  
C. Cut DNAat specific sequences    D. Join DNA fragments
18. What is the primary role of a vector in genetic engineering ? ( )  
A. Cut DNA at specific sequences    B. Join DNA fragments  
C. Amplify DNA    D. Carry foreign DNA into a host cells
19. What is the name of process by which DNA fragments are amplified in vitro using a heat – stable polymerase enzyme ? ( )  
A. Gel electrophoresis    B. Southern blotting  
C. Polymerase chain reaction (PCR)    D. DNA Sequencing
20. Which enzyme is responsible for synthesizing complementary DNA (c DNA) from MRNA in genetic engineering ( )  
A. Restriction enzyme    B. ligase  
C. Reserve transcriptase    D. DNA Polymerase

## II. Fill in the Blanks

1. Genes of tRNA are the smallest genes containing about \_\_\_\_\_
2. The controlling elements were later on called as transposable elements by \_\_\_\_\_

3. Elongation Temperature and Time is \_\_\_\_\_
4. Formula for calculation of the  $T_m$  \_\_\_\_\_
5. The primary purpose of QTL mapping \_\_\_\_\_
6. \_\_\_\_\_ are essential features of gene bank management
7. Plastid transgenes often give high expression levels, can be stacked in \_\_\_\_\_
8. The plastid genetic system is devoid of \_\_\_\_\_
9. Chloroplasts are ideal hosts for the \_\_\_\_\_
10. \_\_\_\_\_ used to generate transgenics
11. What is the primary goal of genetic engineering ? \_\_\_\_\_
12. What is recombinant DNA technology used for in genetic engineering \_\_\_\_\_
13. Which enzyme is commonly used to cut DNA at specific sequences in genetic engineering \_\_\_\_\_
14. Which of the following is not a potential application of genetic engineering \_\_\_\_\_
15. In the context of genetic engineering. What does the term transgenic mean \_\_\_\_\_
16. What is the primary function of reverse transcriptase in the context of telomeres ?
17. Inhibitors of reverse transcriptase are commonly used as antiviral drugs in the treatment of infections caused by \_\_\_\_\_
18. What is the primary function of DNases in a cell \_\_\_\_\_
19. Which type of DNase is responsible for degrading extracellular DNA in bacterial biofilms \_\_\_\_\_
20. DNase II is involved in the degradation of DNA from which source ?

### III. Short answer questions

1. Examples of Transgenic Plants
2. Chloroplast Genome
3. Gene Machine
4. PCR Reaction Buffer
5. Electroporation