

**INTERNATIONAL INDIAN SCHOOL – DAMMAM**  
**PRELIMS – 2012-2013**  
**CLASS: XII - BIOTECHNOLOGY**

**Time Allowed: 3 Hrs**

Max Marks: 70

**General Instructions:**

- (1) All questions are compulsory.*
- (2) There is no overall choice. However internal choice has been provided in one question of three marks and two questions of five marks. You have to attempt only one of the choices in such questions. Question paper contains four sections – A, B, C and D*
- (3) Question numbers 1 to 5 are very short answer questions, carrying 1 mark each.*
- (4) Question numbers 6 to 15 are short answer questions, carrying 2 marks each.*
- (5) Question numbers 16 to 25 are also short answer questions, but carrying 3 marks each.*
- (6) Question numbers 26 to 28 are long answer questions, carrying 5 marks each.*
- (7) Use of calculators is not permitted. However, you may use log tables if necessary*

**Section – A (1 Mark)**

1. Identify the restriction site for the given sequence and name the enzyme that recognizes it  
5' AGATGCAGAGCTGTCA 3'
2. What is the use of an inverted microscope?
3. Name any two cryopreservatives?
4. Difference between stirred tank bioreactor and bubble column reactor
5. Technique used to produce virus free plants

**Section – B (2 Marks)**

6. What are monoclonal antibodies? Enlist the steps involved in their production
7. Give reason: (a) a chemostat is used in continuous culture (b) lyophilized cultures of microbes are viable for several years
8. What is Southern blotting? Give an application of this technique
9. Which vectors can be used to clone fragments of DNA with the following length  
(a) 9 (b) 45 (c) 500 (d) 1000
10. Indicate one application of Site directed mutagenesis
11. Explain aqueous two phase partition
12. Give a note on different types of sequences
13. What is protoplast fusion?
14. What are molecular scissors? Explain the two components of it
15. If you are given a sequence without any label, how will you find out whether it is a DNA sequence or a RNA sequence or a protein sequence?

**Section – C (3 Marks)**

16. What role does pH play in animal culture? What is the optimal pH and how is it maintained?
17. What are the medical applications of the following?  
(a) t-PA (b) Monoclonal antibodies (c) Erythropoietin (d) Factor VIII (e) Factor IX (f) OKT 3
18. With the help of flow sheet describe downstream processing
19. (1) Expand NCBI and EMBL  
(2) How does the consumption of BCAA help athletes in enhancing their performance?

**OR**

- Define metagenome and explain how metagenomic approach helps to identify novel genes?
20. Write all the applications of microbial culture technology
  21. Give a short note on all the procedures used to introduce rDNA into host cells
  22. Explain the advantages of cDNA library over genomic DNA
  23. Explain in detail any three ways in which plant tissue culture can be applied for crop improvement
  24. What is Random shot gun sequencing?
  25. What is micropropagation? What are the steps involved in micropropagation?

**Section – D (5 Marks)**

26. Explain Sangers method of DNA sequencing
27. Enlist the major steps for performing protein fingerprinting . Suggest one application of this technique for detection of human disease

**OR**

Write a brief note on SNP's. Discuss why SNP analysis is important using two examples

28. Make a tabular list of any five restriction enzymes mentioning their source as well as recognition sites.

**OR**

Give a short note on different types of cultures under plant cell technology