APEEJAY SCHOOL, SCHOOL, SHEIKH SARAI-I

Biotechnology

Time allowed : 3 Hrs. **Class – XII** **Maximum Marks : 70**

General Instructions :

- ***(i) Paper has been divided into 4 sections.***
- ***(ii) Section-A consists of question nos. 1-5 of 1 mark each.***
- ***(iii) Section-B comprises of question nos. 6-15 which are short answer type questions of 2 marks each.***
- ***(iv) Question nos. 16-25 are also short answer type questions of 3 marks each.***
- ***(v) Section-D has three questions 26-28 which are long answer type questions of 5 marks each.***
- ***(vi) All questions are compulsory.***

Section-A

1. Name the first artificially constructed plasmid vector. 1
2. How is synthetic medium different from semi-synthetic medium? 1
3. Define downstream processing. 1
4. Name two human disease caused by absence of a protein. 1
5. Who established first human cell line ? What is the name of the cell line ? 1

Section-B

6. What are shuttle vectors ? What is their advantage ? 2
7. Write down the basic requirements of a PCR reaction. 2
8. Define subunit and domain in proteins. 2
9. Why do we design a protein for any product ? Explain giving an example. 2
10. How is sterilization carried out in culture procedures ? 2
11. Draw and label an outline of a mass spectrometer. 2
12. What do you mean by "contact inhibition"? 2
13. Write down the steps involved in RDT. 2
14. Why are baffle flasks preferred over normal flask in culture techniques ? 2
15. Write the full form of GRAS. Where are they used ? 2

Section-C

16. How is rDNA introduced into host cells ? Write names of all methods and explain any one in detail. 3

17. Write down principles behind isoelectric focussing and SDS PAGE techniques. 3

18. Explain how a useful bacterial strain is isolated from nature. 3

19. Define non-catalytic functional proteins, therapeutic and nutraceutical proteins. Give one example of each. 3

20. How are finite cell lines different from continuous cell lines ? 3

21. Why is serum an important constituent of animal cell culture medium ? 3

22. How is a continuous culture better than batch or fed batch culture ? 3

23. Explain different types of mammalian stem cells. 3

24. Draw and label a fermentor. 3

25. Why do you need an inverted microscope during animal cell culture ? Write down precautions taken while using it. 3

Section-D

26. Explain in detail dideoxynucleotide chain termination method for sequence of nucleic acids. 5

27. What do you mean by generation time ? Explain different phases of bacterial growth. Deduce mathematically relationship between exponential growth as related to biomass. 5

28. Write down advantages and limitations of animal cell cultures as compared to living organisms. 5