ME (1) 402 17

INTERNATIONAL INDIAN SCHOOL – DAMMAM
MODEL EXAMINATION – 2017-2018
CLASS: XII - BIOTECHNOLOGY

Time Allowed: 3 Hrs **Total 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 6 are very short answer questions, carrying 1 mark each.
(4)Question numbers 7 to14 are short answer questions, carrying 2 marks each.
(5)Question numbers 15 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.

SET A

Section – A (1 Mark)

1. Write the complementary sequence of the following
   5' TAGKGCMSWNB 3'
2. If a researcher began with a sample containing 7 copies of DS DNA , how many copies would he be able to get after 20 cycles of PCR.
3. What would be the effect of an aqueous environment on the ionic bond strength between amino acids in a protein?
4. Define BV value.
5. Edible vaccines are better than conventional vaccine. Give one reason.
6. Why are lyophilized microbial cultures viable for several years.

Section – B (2 Marks)

7. Name any two bioinformatics databases and type of information obtained from them.
8. Given below is a table of genome size and gene prediction for worm and human. Indicate two observations you can make.

organism	No. of Predicted gene	Part of genome coding for protein
Worm Caenorhabdtitis	19000	27%
Homo sapiens	25000	<5%

9. Derive an equation and show that doubling time and specific growth rate of microbe are inversely proportional.
10. Why computational method of gene counting inaccurate.
11. Karyotype determination of animal cell culture is important. Why? What factors affect its stability.

12. How can expression proteomics be useful in the identification of disease specific proteins?
13. What are the main observations from Margerette D. Hoffs experiment.
14. The LEU2 gene is a selectable marker gene. Explain?

Section – C (3 Marks)

15. Explain MALDI as used in protein studies and indicate its application.
16. Explain the principle of blue white selection of transformed bacterial cells in r DNA technology

OR

In r DNA experiment, the transformed cells are sensitive to one antibiotic A and resistant to antibiotic B. With suitable diagram explain how this happen.

17. Describe the use of following in animal cell culture lab.
(a) spinner flask (b) co_2 incubator
18. In a pilot experiment, it was found that CHO cell lines expressed erythropoietin as 100mg/500ml of culture medium. A biotech company has to produce 500gm of this protein. They have two 50 L fermenters each, which can operate only once per week. How much time will it take to produce the desired amount of protein?
19. Draw a flowchart for the isolation of intracellular microbial metabolite.
20. Explain the technique of southern hybridisation.
21. Define callus. How callus tissue culture is useful.
22. How Agrobacterium used to introduce foreign gene in plants.
23. Why continous culture method preferred over batch culture. List two differences between these microbial culturing methods.
24. Explain the steps in FISH technique.
25. Explain tissue engineering.

Section – D (5 Marks)

26. Expand BLAST. What is this tool used for? Discuss the steps involved in comparison of DNA sequences using this tool.
27. Expand NCBI. What are the possible uses of databases available in NCBI. How can the tools available in these databases be used to retrieve and compare genetic information.

OR

Briefly explain the principle and steps in Sangers DNA sequencing.

28. How can it be proved that sickle cell anaemia results from an amino acid substitution in Haemoglobin

OR

With the help of a diagram explain micro array technology.

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