

NEW
Part-III 3-Tier
2019
BIOTECHNOLOGY
(Honours)
PAPER—VI

Full Marks : 90

Time : 4 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Group—A

Answer any *two* questions. 2×15

1. What is bioinformatics ? How can sequence data be compared ? Discuss alignment algorithm and methods. 2+3+(5+5)
2. (a) Write down the significance of mode.
(b) What is correlation-coefficient ? Write down its two properties.

(Turn Over)

- (c) Find the unbiased SD of the following winglength scores (mm) of a sample of cockroaches :

35, 36, 26, 28, 44, 30, 22, 33, 27, 25, 40, 44, 35, 31, 29, 32.

- (d) What do you mean by axiomatic probability ?

2+(2+2)+7+2

3. (a) Discuss briefly the production of penicillin industrially.

- (b) Give an outline of the mass production of spirulina.

- (c) How mycorrhiza increase the nutrient availability to the plants ?

5+5+5

4. (a) What is meant by biosafety ?

- (b) Discuss briefly on risks for human health in relation to biosafety.

- (c) Write briefly on biosafety guidelines in a biotechnology laboratory.

4+5+6

Group—B

Answer any *five* questions

5×8

5. (a) What is gene ontology ? Why gene ontology is important in genome biology ?

- (b) What is genome mapping ?

(1+5)+2

6. What is homology modeling ? How can you build a 3D structure of a protein by using this technique ? 2+6
7. How do bacterial populations respond in shift-up and shift-down experiments ? Account for their behaviour in molecular terms. 4+4
8. How is food quality controlled and assured ? What are the criteria of good manufacturing practices in the pharmaceutical industry ? 4+4
9. Write briefly on database searching using BLAST. Write down the use of FASTA algorithm. 6+2
10. What do you mean by the human genome project ? What are the implications and benefits of it? 2+3+3
11. Discuss briefly the role and regulations of Indian patents. What is copyright ? (3+3)+2
12. What is Poisson distribution ? Write down its two assumptions. Give an example. 4+(1½+1½)+1

Group—C

Answer any five questions

5×4

13. What is phylogenetics ? What does it interpret ? 2+2
14. Write the importance of microbes in food biotechnology. 4
15. What is the significance of the exponential phase of bacterial growth ? 4

16. What is verniculture ? How it can be compared with chemical fertilizers ? 2+2
17. What are GATT and WTO ? 2+2
18. What is molecular docking ? How is it helpful in drug designing ? 2+2
19. How can you predict the disulfide bridge and signal peptide of a protein using bioinformatics ? 2+2
20. What is functional genomics ? What tools are used in this technology ? 2+2
21. Define sample and data. What is meant by large sample ? Write down its importance in statistics. 1+1+1+1
22. Why research agreement in University and Industry is so importance in the present era ? 4
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