K22U 3686

Reg. No. : ....

Name : ....

Fourth Semester B.Sc. Degree (C.B.C.S.S. – OBE – Regular) Examination, April 2022
(2020 Admission)
CORE COURSE IN LIFE SCIENCES (ZOOLOGY) AND COMPUTATIONAL BIOLOGY
4B05 ZCB : Biomolecular Modeling and Simulations

Time : 3 Hours   Max. Marks : 40

PART – A

Write about **each** of the following in **2** or **3** sentences. **Each** question carries
1 mark :   (6×1=6)

1. Write an account on detergent micelles.

2. What is PDB ?

3. What is collagen helix ?

4. What is α/β barrels ?

5. What is CHARMM ?

6. What is Hairpin array ?

PART – B

Explain about **any six** of the following. **Each** question carries 2 marks :   (6×2=12)

7. Write an account on PDB format.

8. What is free energy calculations ?

9. Write on complex 3D networks.

10. What is molecular electrostatic potential ?

11. What is X-ray crystallography ?

12. Comment on π – helices.

13. What is fragment library ?

14. Comment on membrane proteins and their importance.

PART – C

Write short essay on **any four** of the following. **Each** question carries **3** marks :

(4×3=12)

15. Write briefly on prediction of protein structures using computational tools.

16. What is Brownian dynamics simulations ?

17. Explain determining features of proteins.

18. Explain protein structure hierarchy.

19. Describe the strategies for modelling of a complex environment.

20. What are the computational biology tools for force field analysis ?

PART – D

Write essay on **any two** of the following. **Each** question carries **5** marks :   (5×2=10)

21. Write an essay on homology modelling. What is energy minimization in molecular modelling ?

22. Write an essay on the classes in protein architecture.

23. Write an essay on methods of conformational analysis.

24. Write an essay on molecular dynamics with comments on molecular dynamics packages.