

1. (a) What is the aim of in silico molecular modeling? Explain with one example. 2
- (b) Mention the advantages of semi empirical method over Ab initio. 3
- (c) What are phi ( $\phi$ ) and psi ( $\Psi$ ) angles? Mention their importance in protein structure prediction, giving example of silk. 4
- (d) Name two protein databases. 1
2. (a) Name two structure validation program. 2
- (b) Mention in detail the steps involved in the generation of a model by using Swiss prot. 6
- (c) Define - a. BLAST , b. Anolea , c.  $Q_{\text{mean}}$  , d.  $E_{\text{value}}$  2
3. (a) Why isotactic, syndiotactic polymers can crystallize easily, but atactic polymers are difficult to crystallize? 2
- (b) What are the roles of spin finish? 2
- (c) There are two different theories for silk spinning – micelle model and liquid crystal model. Please explain the micelle model. 4
- (d) Define parallel and anti-parallel beta-sheet crystal structure. 2