

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2019
(First Semester)

Branch-BIOTECHNOLOGY

STRUCTURAL BIOLOGY & CHEMISTRY OF PROTEINS

Time: Three Hours

Maximum: 75 Marks

SECTION-A DO Marks!

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

- 1 Interaction between multiple polypeptide chains form _____.
(i) primary (ii) secondary
(iii) tertiary (iv) quaternary
- 2 α - Helix structure was discovered by _____.
(i) Miller and Harley (ii) Herman Branson
(iii) Linus Pauling (iv) both (i) & (ii)
- 3 Sesbania mosaic virus belongs to the genus of _____.
(i) Caulimovirus (ii) Sobemovirus
(iii) Tobamovirus (iv) none of the above
- 4 TMV is _____.
(i) spherical shaped (ii) rod shaped
(iii) cuboidal shaped (iv) oval shaped
- 5 Solvent refers to the _____.
(i) gas that will dissolve (ii) a solid which dissolves
(iii) a liquid which does the dissolving (iv) a liquid that is dissolved
- 6 X ray crystallography is useful in the study of
(i) lipid structure (ii) three dimensional structure of protein
(iii) arrangements of protein (iv) composition of nucleic acids and proteins
- 7 Peptide bond is a _____.
(i) ionic bond (ii) covalent bond
(iii) hydrogen bond (iv) metallic bond
- 8 A feature in common among all serine proteases is _____.
(i) a hydrophobic specificity pocket (ii) a hydrophilic specificity pocket
(iii) a cluster of reactive serine residues (iv) a single reactive serine residues
- 9 A short peptide region fused to a protein of interest is known as
(i) Tag (ii) Oligonucleotide
(iii) Fragment (iv) Dimer
- 10 Antibodies are produced by
(i) Lymphocytes (ii) Phagocytes
(iii) Monocytes (iv) Thrombocytes

SECTION - B.(25 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 5 = 25)

11 a Explain quaternary structure of proteins with an example.

OR

b Discuss L & D configuration of protein.

12 a Describe the structure of proteins following :

(i) Leucine zipper (ii) coil-coiled structure

OR

b Give a brief note on membrane proteins, with an example.

13 a Enumerate surface plasmon resonance.

OR

b Explain the principle and applications of centrifugation.

14 a Enumerate collagen triple helix.

OR

b Give an account on chymotrypsin.

15 a Explain briefly on site directed mutagenesis.

OR

b Describe a brief note on antibody engineering with its applications.

SECTION -C (40 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 x 8 = 40)

16 a Explain structure of peptide bonds with an example.

OR

b Explain in detail about the following :

(i) Super secondary structures and (ii) tertiary protein structure

17 a Discuss on. SEMV, with a neat sketch.

OR

b Explain the forces that govern protein architecture.

18 a Explain the principle and application of chromatography.

OR

b Discuss on protein sequencing methods.

19 a Describe the structure and function of DNA polymerase enzyme in detail.

OR

b Discuss on subtilisin.

20 a Explain in detail about protein engineering and its methods.

OR

b Enumerate engineering of therapeutic proteins with its applications.