

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)

Branch -BIOTECHNOLOGY

STRUCTURAL BIOLOGY & CHEMISTRY OF PROTEINS

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

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

- 1 - pleated sheets are the examples of _____ .
(i) primary sheets (ii) secondary structures
(iii) tertiary structures (iv) quaternary structures
- 2 The process of protein folding depends upon ____ .
(i) solvent (ii) the concentration of salts
(iii) pH (iv) all the above.
- 3 Bacteriorhodopsin ____ .
(i) absorbs light and pumps proton (ii) is an integral membrane protein
(iii) contains primary α -helical residues (iv) all the above
- 4 Chaperone proteins function by , ____ .
(i) providing a protective environment which proteins can be fold properly
(ii) degrading proteins that have folded improperly
(iii) rescuing proteins that folded incorrectly and allowing them to refold into proper configuration.
(iv) all the above
- 5 Chromatography is a physical method that is used to separate and analyse
(i) simple mixtures (ii) complex mixtures
(iii) viscous mixtures (iv) metals
- 6 Electrophoresis was developed by, ____ .
(i) Tswelt (ii) Tsvedberg
(iii) Tiselius (iv) Sanger
- 7 The proof reading function of DNA polymerase involves all of the following except, ____ .
(i) 3' and 5' exonuclease (ii) Base pairing
(iii) Detection of mismatched base pairs
(iv) reversal of the polymerization reaction
- 8 Antimicrobial peptide work by ____ .
(i) inhibiting protein synthesis (ii) disrupting the plasma membrane
(iii) complementing base pair with DNA (iv) hydrolysis peptidoglycan
- 9 Which of the following properties is improved by site directed mutagenesis?
(i) Physical property (ii) Chemical property
(iii) Tertiary structure (iv) Quaternary structure

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

- 11 a Discuss about tertiary structure of proteins.
OR
b Explain peptide bonding.
- 12 a State any 3 forces that governs protein structure.
OR
b Illustrate motifs with an example.
- 13 a Give a brief note on chemical synthesis of proteins.
OR
b Discuss on gel electrophoresis, with its applications.
- 14 a Write a note on multifunctional enzyme and its types.
OR
b Explain Antimicrobial peptides, with an example.
- 15 a Explain combinatorial enzyme engineering methods, with an example.
OR
b Discuss how to engineer proteins with,
(i) increased temperature tolerance (ii) better substrate binding

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a Enumerate hierarchical organisation of protein.
OR
b Interpret Ramachandran plot.
- 17 a Assess chaperons and chaperonins in detail.
OR
b Elucidate TMV architecture in detail.
- 18 a Determine principle working and applications of X-ray crystallography, with a neat sketch.
OR
b Elaborate Edman degradation.
- 19 a Describe serine protease in detail.
OR
b Explain a detailed role of peptides and polypeptides.
- 20 a Discuss on site directed mutagenesis.
OR
b Discuss on protein engineered biomaterials with its application.