Total No. of Questions : 5]

SEAT No. :

P2122

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[4930]-13
M.Sc. (Semester - I)
MICROBIOLOGY
MB - 503 : Cell Organisation and Biochemistry
(2008 Pattern)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Draw neat - labeled diagrams wherever necessary.***
4) ***Use of logarithmic tables and scientific calculator is allowed.***
5) ***Assume suitable data if necessary.***
6) ***Figures to the right indicate full marks.***

Q1) Attempt any two of the following: **[16]**

a) Describe the bonds involved in stabilization of tertiary structure of proteins.

b) Derive Henderson - Hasselbalch equation and state its significance.

c) Give the principle and application of confocal microscopy.

Q2) Attempt any two of the following: **[16]**

a) Diagrammatically illustrate D - series of aldoses.

b) Describe life cycle of Dictiostelium.

c) Justify, ' Morphogen gradients exist in Drossophila egg and are responsible for generation of antero - posterior polarity of embryo'.

Q3) Attempt any two of the following: **[16]**

a) Describe different types of phospholipids found in bacterial cell membrane.

b) Diagrammatically illustrate the protein import in mitochondria.

c) Differentiate between inductive and mesomeric effects.

P.T.O.

Q4) Write short notes on any four of the followings. **[16]**

a) rRNA

b) Vit K

c) Microfilament

d) De- differentiation

e) Biofilms

Q5) a) A sample of a peptide of unknown sequence was treated with trypsin; another sample of same peptide was treated with chymotrypsin. The sequence (N- terminal to C- terminal) of the smaller peptide produced by trypsin digestion were. **[16]**

Met-Val-Ser-Thr-Lys

Val-Ile-Trp-Thr-Leu-Met-Ile

Leu-Phe-Asn-Glu-Ser-Arg

The sequence of smaller peptide produced by chymotrypsin digestion were

Asn-Glu-Ser-Arg-Val-Ile-Trp

Thr-Leu-Met-Ile

Met-Val-Ser-Thr-Lys^{i}-Leu-Phe

Deduce the sequence of the original peptide.

b) What are the concentration of HOAc and OAc in 0.2 M acetate buffer of pH 5.00? The ka for acetic acid is 1.7×10^{6} (pKa = 4.77)