

P.G. 1st Semester - 2016

BOTANY

Paper : MBOTCCT-104

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

(Marks : 20)

1. Write brief answers (any five) : 1×5=5
 - a) Compare the bond strength between a covalent bond and hydrophobic interaction.
 - b) What do you mean by dipole-dipole interaction?
 - c) What is protein mining?
 - d) What are the consequences of resonance stabilization of peptide bond?
 - e) What criteria of proteins are used for their separation employing 2-D electrophoresis?
 - f) What is micro RNA?

- g) What is antisense RNA?
- h) Write down the conserve sequence found in 3' end of tRNA.

2. Write short notes on any one : 5×1=5

- a) Role of chaperon in protein folding. 5
- b) Write down the differences between B-DNA and Z-DNA. What is mi-RNAs? 4+1=5

3. Answer any one of the following : 10×1=10

- a) Outline the steps to purify protein from plant sample. What criteria are used to evaluate purity of protein? 7+3
- b) What structural features of DNA cause major groove and minor groove to form? Mention the mechanism of 5' capping in mRNA. Why the melting temperature of a DNA molecule increases as the GC content increases? 4+3+3

GROUP-B

(Marks : 20)

4. Write brief answers (any five) : 1×5=5

- i) What is ribozyme?
- ii) Mention two factors that regulate membrane fluidity.

- iii) What is ionophore?
- iv) Distinguish between diffusion & facilitated diffusion.
- v) What are coacervates?
- vi) What are ionophores?
- vii) Comment on the chemistry and types of key regulatory protein CDK involved in cell cycle regulation.
- viii) Why most of the transmembrane protein are -helical?

5. Write short notes on (any one) : 5×1=5

- a) What are the different types of channel proteins involved in membrane transport? Describe the process of coupled transport with an example. 2+3=5
- b) Factors affecting cell cycle. 5

6. Answer any one of the following : 10×1=10

- a) Explain how K⁺ moves across a membrane. How are membrane channels opened? What other ions flow during this process? What are the factors that influence membrane fluidity? 3+2+2+3

- b) What is signal transduction? Describe the process of phosphoinositol and diacylglycerol (IP₃×DAG) mediated signal transduction property in plant cell.

2+4+4
