

**M.Sc. ZOOLOGY**  
**Third Semester**  
**CELL & MOLECULAR BIOLOGY**  
**(MSZ – 303 A)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**(PART-B: Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**Answer any four from Question no. 2 to 8**  
**Question no. 1 is compulsory.**

1.  $\text{Na}^+$  ions are much smaller in size than that of  $\text{K}^+$  ions, but though they are unable to penetrate through  $\text{K}^+$  channels. Explain how  $\text{K}^+$  channel selects for this specific ion.  
(10)
2. Write briefly on (*any two*)- (2×5=10)
  - a. Use of DNA sequence analysis.
  - b. Structure of a mitochondrial DNA.
  - c. Uniporter, Symporter, antiporter.
  - d. Protein trafficking mechanism.
3. Distinguish between transcriptome and proteome. How do you understand on proteome and protein specific information? (4+6=10)
4. Define genome mapping. State how you would determine physical map of a particular gene. (3+7=10)
5. Describe with proper illustrations the ultrstructure of a Nuclear pore complex. (7+3=10)

6. What do you mean by amphipathic nature of membrane lipids? Describe with proper illustrations the molecular composition of a biomembrane. (2+8=10)
7. What is lipid peroxidation? Write about the mechanism of lipid peroxidation. Also add a note on reversible and irreversible cell injury. (2+5+3=10)
8. What is diffusion? What is the equation used to find the rate of diffusion across the membrane? Differentiate between simple diffusion and facilitated diffusion. (2+2+6=10)

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