

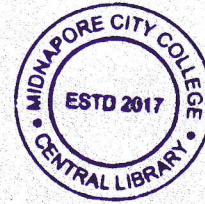
**The West Bengal University of Health Sciences**  
**B.Sc. in Medical Microbiology 1st Semester March, 2023**  
**Examination**

Subject : Cell Biology

Time : 2 hrs.

Full Marks : 50

*Attempt all questions*



1. Tick the correct answer :

10 x 1

- a) In the fluid-mosaic model of the membrane :
  - i) The protein is arranged in layers.
  - ii) The lipid has no specific arrangement.
  - iii) The lipid is fluidic and arranged in a bilayer with functional protein embedded in them.
  - iv) Lipids and proteins are arranged in completely irregular fashion.
- b) Which of the following is a function of plasma membrane?
  - i) Structural barrier and cell communication.
  - ii) Metabolic activities and cell adhesion.
  - iii) Active transport and diffusion.
  - iv) All of the above.
- c) In simple diffusion process, molecules cross the plasma membrane :
  - i) Against concentration gradient.
  - ii) Along concentration gradient.
  - iii) Do not depend on concentration.
  - iv) With the help of energy.
- d) Which of the following organelles is enclosed by a single membrane?
  - i) Mitochondria.
  - ii) Nucleus.
  - iii) Lysosome.
  - iv) Chloroplast.
- e) Which of the following is found only in plants?
  - i) Tight junctions.
  - ii) Gap junctions.
  - iii) Desmosomes.
  - iv) Plasmodesmata.
- f) NOR (Nuclear Organizing Region) occurs in the region of :
  - i) Secondary constriction.
  - ii) Primary constriction.
  - iii) Telomere.
  - iv) Centromere.
- g) When an ion or solute moved against a concentration gradient using energy, the process is called :
  - i) Diffusion.
  - ii) Transport.
  - iii) Active transport.
  - iv) Facilitated diffusion.
- h) A distinctive feature of the lysosome is that it has :
  - i) A lower pH than the cytoplasm.
  - ii) A reduced hydrolase activity.
  - iii) DNA.
  - iv) Ribosome.
- i) The three DNA sequences, which define a chromosome, include all of the following except :
  - i) Centromere.
  - ii) Ribosome.
  - iii) Origin of DNA replication.
  - iv) Telomere.
- j) Who proposed the cell theory?
  - i) Singer and Nicholson.
  - ii) Schwann and Schleiden.
  - iii) Hooke and Brown.
  - iv) Robertson.

2. Answer **any four** of the following questions :

4 x 2

- a) Mention two differences between plant and animal cells.
- b) Draw a labelled diagram of Mitochondria.
- c) Mention the chemical composition of biological membrane.
- d) What is cell recognition?
- e) State two salient differences between eukaryotic and prokaryotic cells.
- f) Enumerate the components of extracellular matrix.

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3. Answer *any four* of the following questions :

4 x 4

- a) Discuss the functions of Endoplasmic reticulum.
- b) Mitochondria is called power house of cell, give reasons for the statement.
- c) Discuss the types of chromosome on the basis of the location of the centromere.
- d) Write a short note on subcellular fractionation.
- e) Why do plant cells have an additional layer surrounding the cell membrane? Mention two functions of that layer.
- f) Mention the components of cell wall.

4. Answer *any two* of the following questions :

2 x 8

- a) Describe the Fluid Mosaic model of cell membrane. Mention two differences between cell membrane and cell wall. 6+2
- b) Discuss membrane transport process in respect to active transport and facilitated diffusion. Define osmosis with example. 6+2
- c) Discuss the structure and functions of Golgi complex. 4+4

