

OCT 2023

**BINDURA UNIVERSITY OF SCIENCE EDUCATION  
SCIENCE & MATHEMATICS EDUCATION DEPARTMENT  
DIPLOMA IN SCIENCE EDUCATION-SCIENCES (DipScEdSc)  
INTRODUCTION TO CELL AND MOLECULAR BIOLOGY (DB001) EXAMINATION**

**DURATION: 2 HOURS**

**(100 MARKS)**

**INSTRUCTIONS TO CANDIDATES**

Answer **FOUR** questions. You **MUST** answer **QUESTION 1** (Section A) and any **THREE** questions from section B. Each question carries **25 MARKS**. Where a question contains sub-divisions, the mark value of each sub-division is given in brackets. Illustrate your answer where appropriate with large clearly labelled diagrams. You should not spend more than thirty minutes on each question.

**SECTION A (COMPULSORY)**

1. (a) Describe a procedure for testing for proteins in a food sample. (10 marks)
- (b) Outline a procedure for preparing onion cells for viewing under a light microscope. (15 marks)

**SECTION B**

2. Describe the processes involved in transport of solutes across cellular membranes.
3. Outline the structure and function of the following organelles:
  - (a) Nucleus. (13 marks)
  - (b) Chloroplast. (12 marks)
4. Write short notes on any five of the following:
  - (a). Glycosidic bond (5 marks)
  - (b). Polysaccharides (5 marks)
  - (c). DNA (5 marks)
  - (d). Cytoskeleton (5 marks)
  - (e). Emulsion test for lipids (5 marks)
  - (f). Vesicles (5 marks)
5. Describe the structure and function of ribonucleic acid (RNA) in biological systems
6. (a) Describe the structure and function of proteins. (15 marks)
- (b) Outline the significance of meiosis. (10 marks)

**END OF EXAMINATION QUESTION PAPER**