BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE

DEPARTMENT OF HEALTH SCIENCE

BACHELOR OF SCIENCE HONOURS DEGREE IN OPTOMETRY

CELL BIOLOGY AND BIOCHEMISRTY OPTC 103 NOV 2024

3 HOURS (100 MARKS)

INSTRUCTIONS

Answer ALL questions. Each question carries 25 marks.

1. Describe the functions of the following
   (a) Nucleus. (5 marks)
   (b) Mitochondrion. (5 marks)
   (c) Rough Endoplasmic Reticulum. (5 marks)
   (d) Smooth Endoplasmic Reticulum. (5 marks)
   (e) Golgi apparatus. (5 marks)

2. (a) Draw a diagram to illustrate the currently accepted model of the structure of the cell membrane. (10 marks)
   (b) Describe the functions of membrane proteins. (15 marks)

3. Describe the role of enzymes in the metabolism of glucose in the lens in the following pathways:
   (a) Pentose phosphate pathway. (10 marks)
   (b) Lactic acid cycle. (15 marks)

4. (a) Write short notes on the following;
   (i) Role of RNA and DNA in lens and retina. (5 marks)
   (ii) Grave's disease. (5 marks)
   (iii) Liquefication of vitreous humor. (5 marks)
   (b) Explain crystalline proteins of the lens and biochemical changes that occur with aging. (10 marks)

END OF EXAMINATION QUESTION PAPER