



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2022/2023**

- COURSE NAME : CELL BIOLOGY
COURSE CODE : DAS 16403
PROGRAMME CODE : DAU
EXAMINATION DATE : FEBRUARY 2023
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER ANY **FIVE (5)** QUESTIONS
2. THIS FINAL EXAMINATION IS
CONDUCTED VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO
CONSULT THEIR OWN MATERIAL OR
ANY EXTERNAL RESOURCES DURING
THE EXAMINATION CONDUCTED VIA
CLOSED BOOK

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

- Q1.** a. i. Define living things.
ii. List two (2) characteristics of living things in corals. (3 marks)
- b. The element carbon (C) has an atomic number of 6.
i. Draw a carbon atom and show all the components of its atom.
ii. Draw all of the different types of bonds that a single carbon can form with other atoms. (7 marks)
- c. i. Define buffer.
ii. Describe the properties of acid and base in relation to the pH scale.
iii. Describe the importance of buffers.
iv. Explain the role of human blood in helping to regulate pH in the human body. (10 marks)
- Q2.** a. Water is an essential and irreplaceable element in all living things.
i. Draw the structure of water molecules and explain what makes water molecules polar.
ii. Sketch and show the interaction between four (4) water molecules.
iii. Explain the characteristics of water that cause land to cool faster than the sea. (10 marks)
- b. Sketch and explain what happens when solid sodium chloride (NaCl) is placed in water. (10 marks)
- Q3.** a. i. Draw the structure of an amino acid.
ii. Sketch and explain the dehydration process between two amino acid monomers that create amino acid polymers.
iii. List four (4) ways that can cause proteins to denature. (12 marks)
- b. i. Differentiate and describe saturated and unsaturated fatty acids.
ii. List four (4) functions of fats in the human body. (8 marks)

- Q4.** a. The cell membrane, also called the plasma membrane, is found in all types of cells.
- State the unit that builds up membrane plasma.
 - Draw the structure formula of the unit in **Q4. a. i.** and explain about the assembly orientation of the units to build up the plasma membrane.
 - List and explain the functions of three (3) different types of embedded proteins in the plasma membrane.
- (9 marks)
- b. All cells acquire the molecules and ions from their surrounding extracellular fluid via transport across the plasma membrane.
- List three (3) different types of transport across membranes.
 - Sketch and differentiate two (2) different types of transport across the membrane in **Q4. b. i.**
- (11 marks)
- Q5.** a. i. Describe cellular metabolism.
- State the type of energy used in cellular metabolism.
 - Draw and explain functions of adenosine triphosphate in the cell.
- (8 marks)
- b. i. Define enzyme.
- Explain the enzyme structure and its characteristics.
 - Draw and explain the effect of an enzyme inhibitor on enzyme activity.
 - Draw and explain how coenzyme affects enzyme activity.
- (12 marks)
- Q6.** a. Photosynthesis is an autotrophic process.
- State the source of energy in this process.
 - Write down the overall equation for the photosynthesis process.
 - Explain all of the events that occur during the photosynthesis process.
- (8 marks)
- b. Eukaryotic cells reproduce by mitosis and meiosis to produce new cells.
- Sketch and describe the differences between metaphase in all cell reproduction processes.
 - State and explain which phase of the cell reproduction process results in genetic variation.
 - Draw and explain each step in the mitosis process by assuming diploid chromosome number is 4.
- (12 marks)

- END OF QUESTIONS -