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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : CELL BIOLOGY

COURSE CODE : DAS 16403

PROGRAMME CODE : DAU

EXAMINATION DATE : JULY/ AUGUST 2023

DURATION : 2 HOURS 30 MINUTES

INSTRUCTIONS :

1. ANSWER ALL 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 **FOUR (4)** PAGES

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- Q1**
- (a) Buffers are important in certain commercial household products. Most buffers consist of pair of substances which is an acid and a base.
- (i) Define the means of the buffer. (2 marks)
- (ii) Describe the mechanism of the buffer when acid or base is added to the solution. (4 marks)
- (b) The simplest form of carbohydrates is monosaccharides. When more than two monosaccharides join, huge polysaccharides such as glycogen and cellulose form.
- (i) Discuss in detail the process of glucose conversion to glycogen as energy storage in animals and the liver. (4 marks)
- (ii) Relate why plants convert glucose to produce starch in order to store carbohydrates. (4 marks)
- (c) List **THREE (3)** roles of protein in the human body. (6 marks)
- Q2**
- (a) Variation in a human occurs by different factors. List **SIX (6)** factors that cause variation in humans. (6 marks)
- (b) Differentiate meiosis and mitosis processes. (6 marks)
- (c) Distinguish normal cell division and cancer cell division (6 marks)
- (d) Discuss the relationship between HIV and AIDS. (2 marks)

- Q3** (a) Describes the functions of organelles listed below.
- (i) Mitochondria. (2 marks)
 - (ii) Ribosome. (2 marks)
 - (iii) Vacuole. (2 marks)
 - (iv) Golgi Bodies. (4 marks)
 - (v) Endoplasmic Reticulum. (2 marks)
- (b) Explain **THREE (3)** differences between plant and animal cells. (6 marks)
- (c) List **TWO (2)** properties of life for living organisms. (2 marks)
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- Q4** (a) The blood type of a father is A, while the mother is B. Identify and sketch the possibility of the blood type of their children. (4 marks)
- (b) Explain why in a population, the red-green color-blind percentage is higher in males compared to females. (4 marks)
- (c) By using the techniques of genetic engineering, scientists can modify the genetic materials so that a particular gene of interest from one cell can be incorporated into a different cell.
- (i) List the procedures involved during the process of incorporating genes of interest from one cell into a different cell. (6 marks)
 - (ii) Describe **THREE (3)** example that shows this technique of gene transfer and incorporation has been successfully used in biomedical or commercial applications. (6 marks)

Q5 Water is the universal solvent.

- (a) Discuss the mechanism involved when NaCl powder is added to the water. (6 marks)
- (b) Explain the process involved during hemodialysis of a kidney failure patient (6 marks)
- (c) Describe why a person becomes thirsty after drinking salt water or seawater (4 marks)
- (d) List **FOUR (4)** applications of the osmosis process (4 marks)

-END OF QUESTIONS –