



UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014**

COURSE NAME : BIOLOGY: FORM AND
FUNCTION
COURSE CODE : DAS 16103
PROGRAMME : 1 DAU
EXAMINATION DATE : JUNE 2014
DURATION : 3 HOURS
INSTRUCTION : A) ANSWER **ALL** QUESTIONS
B) ANSWER **ONE (1)** FROM
TWO (2) QUESTIONS
C) ANSWER **TWO (2)** FROM
THREE (3) QUESTIONS

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

CONFIDENTIAL

SECTION A

- Q1** (a) Cell division is the process of the formation of new cells from a single cell. There are two types of cell division which is mitosis and meiosis.
- (i) List the similarities between meiosis and mitosis. (2 marks)
 - (ii) Distinguish meiosis and mitosis. (6 marks)
 - (iii) Select the correct term.
Chromosomes condense during _____ phase; chromosomes are located in the equator during _____ phase, chromatids separate during _____ phase, chromosomes relax during _____ phase. (4 marks)
- (b) (i) Distinguish normal cell division and cancer cell division. (6 marks)
- (ii) Analyze the relationship between HIV and AIDS. (2 marks)

- Q2**
- (a) Father blood type is AO while mother is BO. Identify and sketches the blood type possibility of their child.
(4 marks)
 - (b) Describe the reason why offspring produced by the same parents are different in appearance.
(6 marks)
 - (c) Explain why in a population, red-green color blind percentage is higher in males compared to females.
(2 marks)
 - (d) By using the techniques of genetic engineering, scientists are able to modify the genetic materials so that a particular gene of interest from one cell can be incorporated into a different cell.
 - (i) List the procedure involved during the process incorporating gene of interest from one cell into a different cell.
(6 marks)
 - (ii) Give an example of how gene transfer and incorporation have been used in biomedical or commercial applications.
(2 marks)

SECTION B

- Q3** (a) Define biology. (2 marks)
- (b) Virus is not a living organism. Discuss the reason. (8 marks)
- (c) Summarize the properties of life for living organisms. (8 marks)
- (d) Complete the level of organization below
- (i) Cellular level (2 marks)
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- Q4** (a) Rewrite the functions of following biological molecule in the human body
- (i) Carbohydrates
- (ii) Lipid
- (iii) Protein
- (iv) Nucleic acid (12 marks)
- (b) (i) Define buffer and describe the mechanism of action when there are addition of acid or bases. (7 marks)
- (ii) Name the one example of commercial products that contains a buffer. (1 marks)

SECTION C

- Q5** (a) Water is the universal solvent.
- (i) Discuss the mechanism involved when NaCl powder is added into the water. (2 marks)
 - (ii) Define solute, solvent and solution. (3 marks)
- (b) In lifesaver boat, it is equipped with a tube that contains semi permeable membrane.
- (i) State the purpose and explain the process involved in that tube. (4 marks)
 - (ii) Relate above application with the process involved during hemodialysis for kidney failure patient. (6 marks)
 - (iii) Discuss why a person become more thirsty after drinking salt water or sea water. (3 marks)
 - (iv) State the importance of osmosis in plants. (2 marks)

- Q6** (a) Energy used in metabolism is derived from chemical energy including fats. This energy is used to build and maintain our cells and tissues.
- (i) Compare saturated and unsaturated fat. (6 marks)
- (b) Enzymes are biological catalysts.
- (i) List the properties of the enzymes. (3 marks)
- (ii) List the factor affecting rate of enzyme reactions and give a brief explanation. (8 marks)
- (iii) Describe the reason why enzymes are likely not effective in high temperature outside optimum temperature. (3 marks)
- Q7** (a) Photosynthesis is a two stage process. The first process is the Light Dependent Process which requires the direct energy of light to make energy carrier molecules. The Light Independent Process or Dark reaction is when the products of the Light Reaction are used to form C-C covalent bonds of carbohydrates.
- (i) List the stages of photosynthesis based on Light Dependent Process and Dark Reaction. (8 marks)
- (ii) Give comparison between Light Dependent Process and Dark Reaction. (2 marks)
- (b) Compare fermentation and cellular respiration. (4 marks)
- (c) Summarize the roles and cycles of carbon dioxide in ecosystems. (6 marks)

- END OF QUESTION -