



UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2016/2017**

TERBUKA

COURSE NAME : BIOLOGY FORMS & FUNCTIONS
COURSE CODE : DAS 16103
PROGRAMME CODE : DAU
EXAMINATION DATE : JUNE 2017
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : ANSWER ANY **FIVE (5)**
QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

CONFIDENTIAL

- Q1.** (a) (i) Define living things.
(ii) Explain one example that shows living things respond to their environment. (2 marks)
- (b) (i) Define atom.
(ii) State the charge and location of electrons, protons and neutrons in an atom.
(iii) Give the component that give mass to an atom. (9 marks)
- (c) (i) Define water.
(ii) Explain what makes water molecules has polar characteristics.
(iii) Draw and describe the action of water molecule when a solid Sodium Chloride (NaCl) is added to water. (9 marks)
- Q2.** (a) (i) List all macromolecules in living things.
(ii) State the main elements that build macromolecules. (6 marks)
- (b) (i) Give the purpose of hydrolysis process.
(ii) Explain the hydrolysis process. (4 marks)
- (c) (i) Explain the structure of unsaturated lipid.
(ii) List all structures that compose triglycerides. (3 marks)
- (d) (i) Define protein.
(ii) Proteins are grouped into three groups based on their characteristics of the R-group. List all amino acid groups.
(iii) State the type of bonding in primary, secondary and tertiary structure of protein synthesis process. (7 marks)
- Q3.** (a) (i) Briefly explain '*The Cell Theory*'
(ii) List all basic component of a cell.
(iii) Draw and label a simplest prokaryotic cells (13 marks)
- (b) Cell membrane is a very important structure of a cell.
(i) Give the function of a cell membrane
(ii) Draw a phospholipid structure and show polar and non-polar parts. (3 marks)



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- (c) (i) Define diffusion.
 (ii) Sketch diagram of diffusion process if red ink is dropped into distilled water.
 (4 marks)

- Q4.** (a) (i) Define ATP.
 (ii) Explain how ATP store and release energy.
 (5 marks)
- (b) (i) Define enzyme.
 (ii) Describe the characteristics of enzyme.
 (4 marks)
- (c) Draw and explain the lock and key theory of enzyme.
 (7 marks)
- (d) Give **two (2)** factors that affect rate of enzyme reaction and sketch the graph of the reaction of each factor.
 (4 marks)

- Q5.** (a) Define
 (i) Respiration
 (ii) Cellular respiration
 (2 marks)
- (b) Give **two (2)** differences between aerobic respiration and anaerobic respiration.
 (4 marks)
- (c) (i) State the purpose of glycolysis process.
 (ii) State the location of glycolysis process occurs.
 (iii) State the condition and the pathways that pyruvate may undergo.
 (6 marks)
- (d) (i) State **two (2)** main important of photosynthesis process.
 (ii) Write the overall process of photosynthesis process reaction.
 (iii) Briefly explain all stages in photosynthesis process.
 (8 marks)

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- Q6.** (a) (i) State all heredity material of living organisms.
 (ii) List all types of cell division process.
 (iii) Give **one (1)** example of cell that undergo each process in **Q6(a)(ii)**.
 (5 marks)
- (b) Draw and explain steps in mitosis process. Consider the cell has 2 pairs of homologous chromosomes.
 (15 marks)

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- Q7.** (a) (i) Define inheritance.
(ii) Briefly explain traits inheritance from parents to their children. (4 marks)
- (b) State the meaning of
(i) dominant traits
(ii) recessive traits
(iii) alleles
(iv) genotype
(v) phenotype (5 marks)
- (c) A species of wildcat comes in three colors, blue, red, and purple. This trait is controlled by a single locus gene with incomplete dominance. A homozygous (BB) individual is blue, a homozygous (bb) individual is red, and a heterozygous (Bb) individual is purple.
(i) State the genotype and phenotype of the offspring, F1 generation, if a blue wildcat were crossed with a red wildcat.
(ii) State the genotype and phenotype of the offspring if the offspring from **Q7(c)(i)**, F1 generation, are crossed among each other. (11 marks)

-END OF QUESTIONS -

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