UNIVERSITI TUN HUSSEIN ONNMALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	BIOLOGY: FORMS AND FUNCTIONS
COURSE CODE	:	DAS 16103
PROGRAMME	:	1 DAU
EXAMINATION DATE	:	MARCH 2013
DURATION	:	3 HOURS
INSTRUCTIONS	:	ANSWER **ALL** QUESTIONS IN **PART A** AND **TWO (2)** QUESTIONS IN **PART B**

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

PART A

Q1 (a) Give three (3) differences between mitosis and meiosis?

(6 marks)

(b) In which type of cell does meiosis cell division occur?

(2 marks)

(c) Draw all the phase in mitosis in a cell with four (4) chromosomes and briefly explain what happen in every particular phase.

(15 marks)

(d) How many cell will produced from 1 parent cell in
(i) Mitosis process
(ii) Meiosis process

(2 marks)

Q2 (a) (i) What is the molecule containing genetic material that is copied during cell reproduction?

(ii) Where is the molecule containing genetic material found in cells?

(2 marks)

(b) Give the definition of

(i) DNA

(ii) Genes

(4 marks)

(c) (i) What is the enzyme that replicate DNA?

(ii) Where does the process of DNA replication happen in the cells?

(iii) Given a nucleotide sequence 5'—ATGGAACCCATATCTCGA—3', write the complimentary of the sequence given.

(iv) Where does the process translation take place and what is the product of this process?

(7 marks)

(d) The genotype and phenotype of seed structure of pea plant are as list in TABLE Q2 as below:

TABLE Q2

Genotype	Phenotype
G	Green seed color
g	Yellow seed color
R	Round seed
r	Wrinkle seed

If plant A with genotype GGRR (phenotype: green-round seed) is been cross hybrid with plant B with genotype ggrr (phenotype: yellow-wrinkle seed)

(i) List the possible gametes genotype produced by plant A and plant B?

(ii) Plot the cross hybrid chart between plant A and plant B

(iii) Write the genotype and phenotype of F_1 generation.

(8 marks)

(e) (i) A cell with 46 chromosomes will produce how many chromosomes after a mitosis process?

(ii) If the mother has blood type AB and the father has O type, list all the possible blood type of their children

(4 marks)

PART B

Q3 (a) (i) List four (4) the characteristics of living things
(ii) Define living things

(6 marks)

(b) (i) Explain the characteristic that makes water as a universal solvent
(ii) Sodium chloride, NaCl can dissolve in water. Draw, label and explain the diagram to show how water molecules react as a solvent.

(8 marks)

(c) (i) Defined acid
(ii) Does adding acid hydrochloric can change pH of distill water? Explain

(6 marks)

(d) (i) Defined dehydration
(ii) Disaccharide molecule is made up from two monosaccharide molecule. Draw and explain the dehydration process that involve glucose molecule (FIGURE Q3 as in ATTACHMENT 1)

(5 Marks)

Q4 (a) List all the basic organelles and their function that are common between prokaryote and eukaryote cells

(8 marks)

(b) Draw a eukaryote cells and label the organelle listed below
(i) Nucleus
(ii) Reticulum endoplasmic
(iii) Ribosome
(iv) Mitochondria
(v) Membrane cell

(5 marks)

(c) (i) Does facilitated diffusion across membrane require energy? Explain
(ii) Give the different between passive and active transport of membrane.
(iii) Draw and show the water molecule movement in osmosis across membrane.

(9 marks)

(d) Explain what will happen when a red blood cell is deep in a hypertonic solution. Draw a diagram of the cell and show any molecule movement across membrane.

(3 marks)

Q5 (a) Describe the lock and key theory of enzyme

(3 marks)

(b) List four (4) factors affecting the rate reaction of enzyme

(4 marks)

(c) FIGURE Q5 (as in ATTACHMENT 1) shows the activity of enzyme.

(i) Label A, B, C, D and E

(ii) Briefly explain what happen in situation I

(iii) What happen to the enzyme activity in the present of E in situation II?

(13 marks)

(d) (i) Define the function of ATP in life

(ii) How many ATP molecules produced from 1 molecule of glucose in cellular respiration?

(iii) Which organelle in the cell that plays an important role in energy production and explains why.

(iv) What is the name of the process that produces the most ATP in cells?

(5 marks)

Q6 (a) What is the starting material for
(i) Glycolysis
(ii) Krebs cycle

(2 marks)

(b) What is the main purpose of
(i) Glycolysis
(ii) Krebs cycle
(iii) Electron transport chain

(6 marks)

(c) Explain how do NADH and $FADH_2$ play a role in ATP production?

(6 marks)

(d) (i) What is the main purpose for photosynthesis?
(ii) Which organelle does photosynthesis happen?
(iii) What is needed for photosynthesis to happen?
(iv) List all the product of photosynthesis
(v) What is the main source of energy for photosynthesis?
(vi) Write the overall equation for photosynthesis

(11 marks)

- END OF QUESTION -

ATTACHMENT 1

PEPERIKSAAN AKHIR
FINAL EXAMINATION

SEMESTER / SESI *SEMESTER / SESSION*	:	**SEM II / 2012/2013**	**PROGRAM** *PROGRAMME*	:	**1 DAU**
KURSUS *COURSE*	:	**BIOLOGY: FORMS AND FUNCTION**	**KOD KURSUS** *COURSE CODE*	:	**DAS16103**

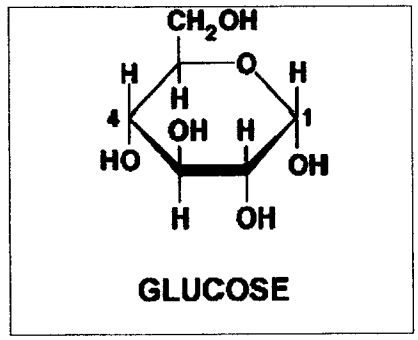

FIGURE Q3

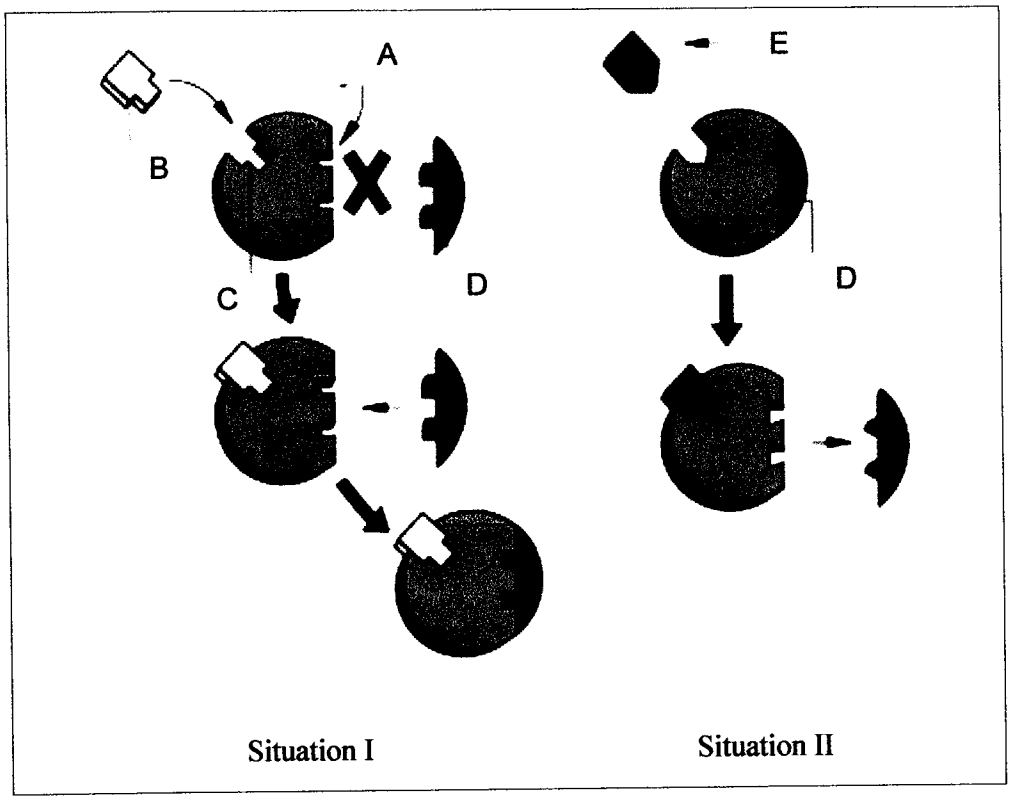

FIGURE Q5