

JUNE 2016

ADVANCED LEVEL

Subject Title	BIOLOGIE
Paper No./Title	Paper 2 theory
Subject Code No	0710

THREE HOURS

Answer any FIVE out of the eight questions .

If more than five questions are answered, only the first five will be marked.

All questions carry equal marks. Marks allocated to part of questions are indicated in brackets.

Illustrate your answers wherever desirable with large, clear and fully labeled diagrams.

You are reminded of the necessity for good English and orderly presentation in your answers.

1. a) Define excretion
b) State the waste products of metabolism in vertebrates, their origin and the structures responsible for the elimination.
c) Describe
 - i. The production
 - ii. The removal of urea in mammals.

2. a) Explain how the structures of:
 - i) Chloroplast and
 - ii) Mitochondrion are adapted to their functions
b) Using only structures, differentiate between a bacterial and a chlorenchyma revealed by an electron microscope.
c) What are the advantages and disadvantages of using the light and electron microscopes to study cell organelles?

3. a)
 - i) What are the effects of oil pollution on marine and coastal environments?
 - iii) List five recent techniques for treating and prevention oil pollution.
b) How can our land be conserved to ensure greater survival of species?
c) State how you can ensure that the clean-up campaigns in our cities are more effective.

4. (a) List the characteristics properties of hormones
(b) Explain briefly how hormones enter their target and exert their effects

- (c) Discuss the role of auxins in flowering plants.
- 5. (a) (i) What is accommodation with respect to vision?
ii) How are far and near objects focused by the eye?
(b) List the differences between the photosensitive cells found in the retina of the eye.
(c) How are sunapses important in the transmission of nervous impulses in mammals?
- 6. (a) Why the multicellular animals need a transport system?
(b) Differentiate between lymphatic and blood circulator systems?
(c) State the role of the lymphatic system in the defense mechanics of the body.

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- 7. (a) Define the following genetic terms
 - (i) Gamete
 - (ii) Zygote
 - (iii) Chromosome
 - (iv) Homozygous
 - (v) Heterozygous

(b) Assure that brown hair colour is a genetic characteristic which is sex-linked and lethal in the homozygous recessive state. Cary out a cross and state the proportions of offspring produced if a woman who heterozygous with brown hair is crossed with a homozygous dominant browns haired man.

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- 8. (a) Define the following terms as used in genetic engineering:
 - i) Recombinant DNA
 - ii) Complementary DNA
 - iii) Restriction enzymes
 - iv) DNA ligase
 - v) Vector
 - vi) Host
 - vii) Plasmid
 - viii) Reverse transcriptase
 - ix) Transgenic organism
 - x) DNA polymerase
 - (b) Write short notes on the following:
 - (i) Applications of Biotechnology in the fields of madecine
 - (ii) Applications of Biotechnology in the fields of agriculture
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