TYPICAL EXAMPLES OF GR. 12 ESSAYS FROM PAST PAPERS APPLICABLE TO THE CAPS

NB: These are NOT the only questions that can be included in essays. It is only to assist learners in their preparation. Some of the questions in this document were adapted to satisfy the CAPS prescriptions.

Mark allocation of all these questions is:

Content:	17
Synthesis:	3
TOTAL:	20

PAPER 1 (APPLICABLE to CAPS)	PAPER 2 (APPLICABLE to CAPS)
Nov. 2011 Describe how the principle of negative feedback operates in controlling the glucose concentration of the blood in a normal healthy person. Also describe the causes, symptoms and management of the disease diabetes mellitus which results from an inability of the body to normalise the glucose concentration of the blood.	EXEMPLARS 2011 Describe how proteins are formed in a cell and explain the impact of the two types of gene mutations on the formation of proteins.
Feb. 2012 Describe the role of the hypothalamus and the adrenal glands in bringing about changes to the blood vessels of the human skin and explain why these changes take place.	<u>Nov. 2011</u> Describe the mechanisms by which meiosis contributes to genetic variation and describe how abnormal meiosis leads to Down's syndrome.
Jun. 2012 Discuss the concept of homeostasis by referring to the role played by the pituitary gland, the thyroid gland and the autonomic nervous system in regulating the metabolic rate of the body.	March 2012 Mention structural differences between DNA and RNA and describe the role of both molecules in the synthesis of proteins. Also explain the uses of DNA fingerprinting/profiling in everyday life
<u>Nov. 2012</u> The nervous and endocrine systems help to protect the human body. Use suitable examples to describe how this is achieved through a reflex action and by the hormone adrenalin.	Gauteng Jun. 2012 DNA carries the genetic code to determine which protein is going to be formed. Name and describe TWO processes involved in converting the genetic code of the DNA into protein
Feb. 2013 Describe the negative feedback mechanism involving TSH and thyroxin and describe the consequences if this mechanism does NOT function well.	Nov. 2012 One of the observations Darwin made during his study of pigeons was about artificial selection. In 1859 Darwin and Wallace jointly proposed that new species could develop by a process of natural selection. Using examples, describe natural and artificial selection and also highlight the differences between these two processes.
<u>Jun. 2013</u> When the human body is exposed to extreme environmental temperatures, certain control mechanisms play a role to maintain internal body temperature. Describe the role of the brain and the skin in the regulation of body temperature on a very cold day.	Feb. 2013 Charles Darwin and Jean Baptiste de Lamarck had different ideas to explain evolution. Describe how each of them would have explained the evolution of the long necks of giraffes. Justify whose idea is more acceptable in the science community today.
Nov. 2013 Describe the role of hormones during the menstrual cycle in the female body.	Jun. 2013 Compare the different characteristics between the Human and other ape-like beings that characterise human evolution. Also highlight the significance of the position of the foramen magnum in humans.

PAPER 1 (APPLICABLE to CAPS)	PAPER 2 (APPLICABLE to CAPS)
Feb. 2014 (Supplementary Paper of 2013) Start with a cell containing FOUR chromosomes and describe ALL the chromosomal changes that occur during meiosis, resulting in the formation of abnormal gametes due to non-disjunction in	Sep. 2013 Describe the process of protein synthesis and also describe the impact that gene mutations may have on the formation of proteins.
meiosis 1. Feb. 2014 (Supplementary Paper of 2013) Name and state the functions of FOUR hormones secreted by the pituitary gland in humans. Describe how the pituitary gland controls the functioning of the thyroid gland using negative feedback.	Nov. 2013 Describe the structural changes to the skull that characterise the evolution of modern humans from their ape-like ancestors, and explain the significance of these changes.
Exemplars 2014 Name the hormones produced by the testes and ovaries and describe the role of each hormone in human reproduction.	Exemplars 2014 It is thought that modern humans evolved gradually from ape-like beings over millions of years through speciation. Describe how a single species can form new species, and explain how the differences in the skulls and other parts of the skeleton of primitive ape-like beings and modern humans support the idea that the general trend in human evolution has been towards bipedalism and a change in diet from raw food to cooked food
June 2014 State the difference between a reflex action and a reflex arc. Describe the functioning of a simple reflex action, using a suitable example. Mention in your description the role of each component of the reflex arc.	June 2014 Describe the structure of DNA as well as the process of DNA replication. Also explain the significance of DNA replication for meiosis.
Sept. 2014 Explain what food security is and discuss how poor farming practices and reduced agricultural land as a result of alien plants, influence food security in South Africa.	Sept. 2014 Describe Lamarckism, Darwinism and Punctuated Equilibrium as explanations for evolution and show similarities in these explanations.
Gauteng Sept. 2014 "Homeostasis is the maintenance of a constant internal environment, within narrow limits, despite a changing external environment." Nomsa is sitting in class on a particular day and looks at the wall thermometer. What she sees is shown in the diagram of part of the thermometer below. Diagram with thermometer showing 45 °C Discuss the processes and mechanisms that are involved in thermoregulation and osmoregulation in her body on that particular day.	Gauteng Sept. 2014 Sandy has given birth to a baby girl. There are two men claiming to be the father of the child. Explain how the inheritance of blood groups and DNA testing could assist in establishing who the father is.
Nov. 2014 A goalkeeper in a soccer match prevented a goal from being scored when he dived to his right after the ball was kicked towards him. Just before he dived, he heard his team-mate shout, 'your ball'. Describe how his eyes adjusted to see the ball as it travelled towards him and describe how he heard his team-mate and maintained his balance as he dived to save the ball.	Nov. 2014 Describe how meiosis and different types of mutations contribute to genetic variation and the role of this variation in natural selection.

The unciellular zygote undergoes many developmental changes until it becomes a multicellular foutus, nourished and protected by the mother. Describe the changes that allow the zygote to eventually develop into a foetus and how this foetus is nourished and protected during the period of pregnancy. Jun. 2015 Explain how the use of water by domestic, industrial and agricultural actions might lead to eutrofication, thermal pollution and describe the fifets of eutrofication, thermal pollution and describe the fifets of eutrofication, thermal pollution and describe the role played by the hypothalamus to regulate the water content of the body, on a hot day. Mov. 2015 Explain how ghen exclusions and the development of this zygote until implantation. Seen. 2015 Modern Humans (Horno sapiens)differ from African apes in many ways. Describe these African apes in many ways. Describe these African apes in the ateutor is the development of this zygote until implantation. Seen. 2015 Describe the process of protein synthesis and the way in which this process would be affected by a gene mutation. Seen. 2015 Describe the process of protein synthesis and the way in which the sprocess would be affected by a gene mutation. Seen. 2016 An ancestor of the elephant. The proboscis of Phiomia and ale long nose-like structure called a proboses which evolved in the trunk of the elephant. The proboscis of Phiomia and the runk of the elephant terms of Lamarckism and Darwinisma as well as the way in which an increase in the length of the trunk in terms of Lamarckism and Darwinisma as well as the way in which an increase in the length of the trunk of the elephant form the udifier on the audifier on the audifier on the audifier on the audition on the elephant tough antificial selection. Describe the role of his ears and his brain to hear how plan form the audience cheering him on. Describe the role of his ears and his brain to hear how plant the server and his brain to hear how plant the role of his ears and his brain to hear how plant the mode h	Feb. 2015	Feb. 2015
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Describe the role of his ears and his brain to hear	Describe the value of his same and his busis to been	mutations on living organisms.
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<u>Sep.2016</u>	· · · · · · · · · · · · · · · · · · ·	<u>Sep.2016</u>
Sep. 2016 Describe the development of the Graafian follicle	Sep. 2016 Describe the development of the Creation fallials	The characteristics of organisms can be changed
until it becomes a corpus luteum during the an example to describe	until it becomes a corpus luteum during the	genetic engineering. Use an example to describe
menstrual cycle, describe oogenesis and also selective breeding and also describe the	menstrual cycle, describe oogenesis and also	selective breeding and also describe the
explain how another Graatian tollicle is prevented similarities and the differences between natural	explain how another Graafian follicle is prevented	similarities and the differences between natural
engineering.	non torning in the case of pregnancy.	engineering.

No. 0040	Nov. 0040
Nov. 2016 While walking in the bush Paul hears a sound which he thinks is the roar of a lion. He immediately runs to safety.	Nov. 2016 Fossils of the bipedal primates <i>Ardipithecus</i> , <i>Australopithecus</i> and early <i>Homo</i> species are used to support the 'Out of Africa' hypothesis.
Describe how he hears the sound and describe the role of adrenalin to ensure that his muscles are able to function efficiently while he runs away.	State the 'Out of Africa' hypothesis. Describe the evidence that supports the 'Out of Africa' hypothesis and the evidence that shows that the three primate genera mentioned above, were all bipedal.
Feb/March 2017 Plants and animals are both able to detect light and respond to it. Explain how the stems of plants react to a one sided light stimulus and describe the pathway of light through the human eye until converted into an impulse	Feb/March 2017 An ancestor of the elephant, Phiomia, had a long nose-like structure called a proboscis which evolved to the trunk of the elephant. The proboscis was used to collect leaves for food. The proboscis of Phiomia and the trunk of the elephant are shown below. The diagrams are not drawn to scale.
	proboscis Ancestor of elephant (Phiomia)
	Explain the evolution of the trunk of the elephant regarding Lamarckism and Darwinism, as well as the way in which the elongation of the trunk of the elephant can happen by natural selection
Jun 2017 A man was accidentally locked in a cool room in which the temperature was 8°C. He was only released after six hours when a co-worker heard his cries for help. Describe how his body maintained his temperature at 37°C and how his co-worker heard his cries for help.	Jun 2017 Differentiate between a <i>population</i> and a <i>species</i> , describe speciation by geographic isolation and explain how speciation and extinction affect biodiversity.
Sep 2017 Describe the process of oogenesis in the female body. Also describe the functions of the hormones produced by the ovaries including their role in the body during puberty	Sep 2017 Describe the structural changes to the body that correspond with changes in the diet and the change to bipedalism in the evolution of modern humans and explain the significance of these changes

ASSESSING THE PRESENTATION OF THE ESSAY: Synthesis (e.g. Gauteng Sept. Paper 1)

Criterion	Elaboration		Mark
Relevance	All information provided is relevant to the topic	Only information relevant to thermoregulation and osmoregulation on a hot day is given (no irrelevant information is provided)	1
Logical sequence	Ideas arranged in a logical/cause-effect sequence	The sequence of events that occur during thermoregulation and osmoregulation are correct. The structures in the skin and the hormone/s of osmoregulation are linked to the appropriate events	1
Comprehensive	Answered all aspects required by the essay	The role of the hypothalamus, blood vessels & sweat glands in thermoregulation and the role of ADH in osmoregulation are included	1

Hints and tips:

Break up the information into logical parts as given in the question and discuss each part in its own paragraph

- Don't repeat facts
- Get to the point and keep the facts relevant
- Don't use unnecessarily long sentences
- Put your statements in context and in a logical/cause-effect sequence
- Cover all aspects required by the essay
- No tables, diagrams or flow diagrams are allowed in your essay