NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2009

LIFE SCIENCES: PAPER II

EXAMINATION NUMBER

ANSWER BOOKLET

There are (v) pages in this booklet

QUESTION 1

Answer this question in the spaces provided. Place this yellow booklet inside the Answer Book in which you answer the rest of the examination paper.

1.1 Select the term in Column B that best matches a description in Column A. Write the letter of the term in the corresponding space provided between the brackets.
Each letter may only be used once.

	Column A	Column B
[ ]	General term for non-living 'things' in the environment.	A monoculture
[ ]	Collective term for substances that cause harmful effects in ecosystems.	B biodiversity
[ ]	An indication of the variety of living things found in an environment.	C ecosystem
[ ]	Planting the same crop every year in a field.	D biotic component
[ ]	A large area consisting of many ecosystems.	E pollutants
[ ]	Rise in the average temperature of the earth.	F food web
[ ]	Linked food chains showing the energy flow in an ecosystem.	G abiotic factors
[ ]	Extreme levels of nutrients in a dam.	H global warming
[ ]	Area in which living and non-living things interact with each other.	I greenhouse gases
[ ]	Has a pH less than 5 due to dissolved sulphur dioxide and nitrogen oxide.	J biome
		K eutrophication
		L acid rain

(10)

1.2 Five multiple choice questions are given below. Choose the most correct alternative in each question and write its letter in the space provided in the table.

Question	1.2.1	1.2.2	1.2.3	1.2.4	1.2.5
Answer					

(10)

1.2.1 The wings of a fly and the wings of a bird are …

A vestigial.
B analogous.
C exoskeletons.
D homologous.

1.2.2 A new insecticide was sprayed on a large population of mosquitoes in Mpumalanga over a number of breeding cycles. At first the number of mosquitoes was reduced enormously. After a number of breeding cycles the population then began to increase in numbers and the insecticide appeared to no longer work.
How would Darwin's theory of natural selection explain these observations?

A Some mosquitoes had already reproduced before the insecticide was used.
B Some mosquitoes were isolated and used as a control.
C Some of the original population were resistant to the insecticide and passed this on to their offspring.
D Some of the original population adapted to the insecticide and survived to produce offspring.

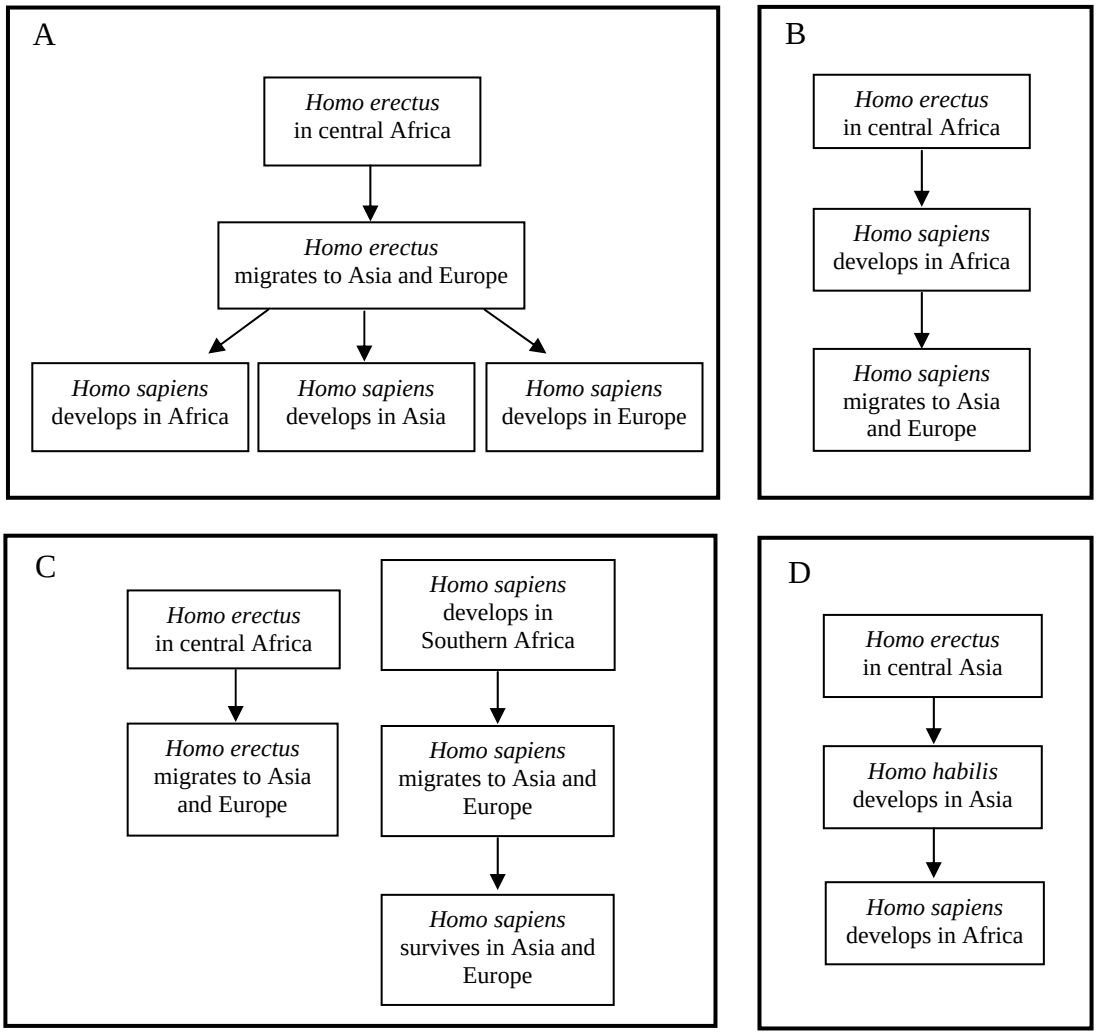
1.2.3 The study of a man's past through material remains of different cultures is called:

A palaeontology
B astrology
C anthropology
D archaeology

1.2.4 The evolution of humans, gorillas and apes from a common ancestor is an example of …

A micro-evolution.
B divergent evolution.
C convergent evolution.
D 'Out of Africa' theory.

1.2.5 Which flow chart correctly shows human development and migration according to the 'Out of Africa' theory?



1.3 Give the correct biological term for each of the following descriptions. Write the term on the line provided.

To walk upright on two legs. _____

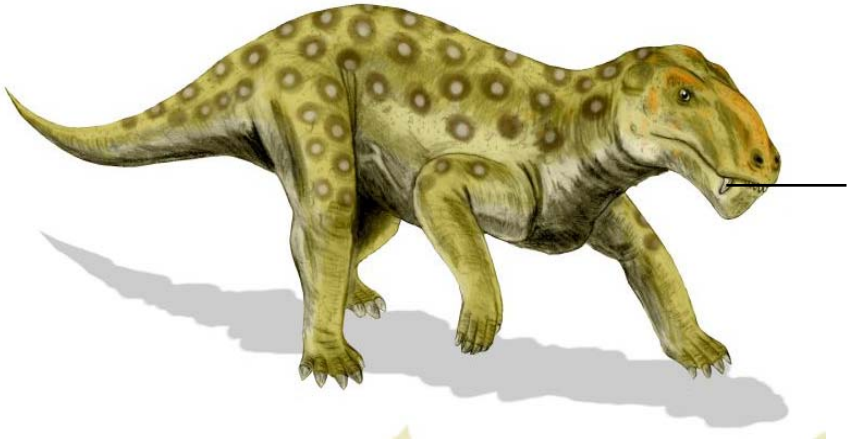
Group to which humans and their fossilised ancestors belong. _____

Small genetic changes that occur within a single species. _____

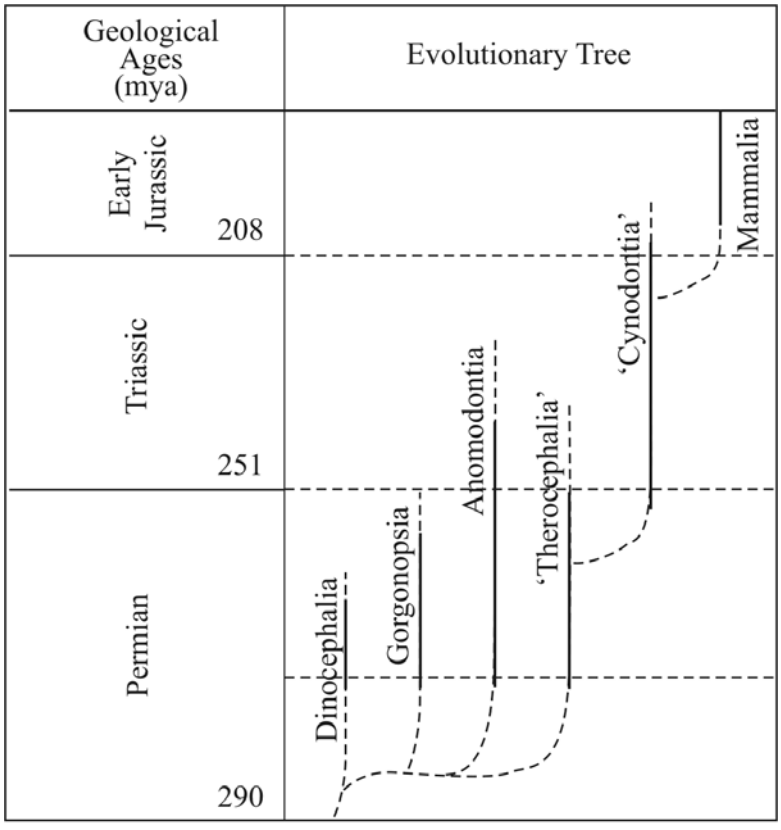
Moving of large land masses of the earth's crust. _____

Speciation that arises from geographic isolation of populations of the same species. _____ (5)

1.4 The picture below illustrates a gorgonopsid. These mammal-like reptiles lived about 270 million years ago and became extinct about 250 million years ago during the great mass extinction that took place at the end of the Permian age. Gorgonopsians were fierce predators with very large canines. Some species were the size of a rhinoceros whilst the smaller types were the size of a dog. Fossils of these animals are found in the rocks of the Karoo in South Africa. These fossils record the evolutionary development of mammals from reptiles.



A gorgonopsid



Evolutionary Family Tree of mammal-like reptiles

1.4.1 Define 'extinction'. _____ (2)

1.4.2 For how long did the Gorgonopsia live? _____ (2)

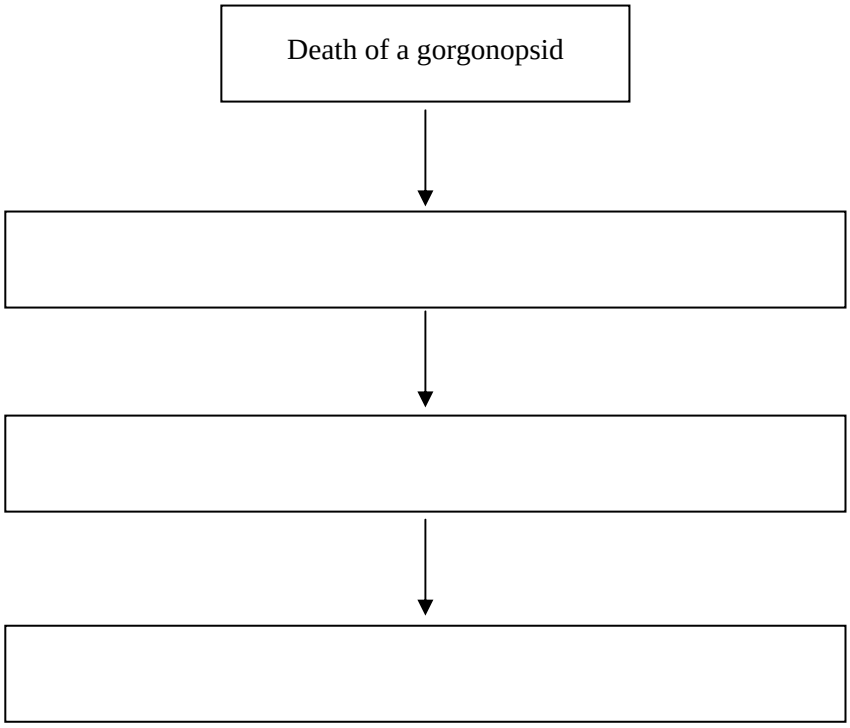
1.4.3 Write a clear **X** on the evolutionary family tree to show the common ancestor of the Gorgonopsia and Mammalia. (1)

1.4.4 State TWO types of evidence that scientists could use to construct an evolutionary family tree.

_____

_____ (2)

1.4.5 Complete the flow chart below to summarise the process of fossilisation of the gorgonopsid.



(3)

1.4.6 Various explanations are given for the cause of the great mass extinction at the end of the Permian age (250 million years ago). These include the theory of fluctuation in sea level, continental drift and volcanic eruption. The 41 species of Gorgonopsia became extinct during this time.
In your opinion, which theory best explains the extinction of these and most other species on Earth at this time? Justify your choice briefly.

_____

_____

_____

_____ (5)

40 marks