



eduresourceza.com

CONSOLIDATION

Learner Note: Please ensure that you adhere strictly to the time allocation for each question. This is good practice for when you get to your exams.

SECTION A: TYPICAL EXAM QUESTIONS**Question 1: 6 minutes***(Taken from various exam papers)*

Various options are given as possible answers to the following questions. Choose the correct answer and write the letter (A to D) next to the question number (1.1 to 1.6) on your sheet.

Use the following information to answer question 1.1 and 1.2.

Mesosaurus was a giant reptile that lived about 279 million years ago. The average *Mesosaurus* measured about one metre in length, had webbed feet, a long tail and numerous sharp teeth. Fossils from *Mesosaurus* have been found in only two places: the eastern side of South America and the western side of South Africa.

- 1.1. *Mesosaurus* was most likely to be
 - A. a land animal that ate plants
 - B. an aquatic animal that ate plants
 - C. an aquatic animal that ate small fish
 - D. a land animal that ate small animals
- 1.2. The distribution of the fossil remains is evidence of
 - A. speciation
 - B. continental drift
 - C. natural selection
 - D. divergent evolution
3. Which of the following would be an example of convergent evolution?
 - A. Hummingbirds changing bill size and shape to fit easily into flowers
 - B. Competition among finches of Galapagos Islands causing speciation
 - C. Anteaters in both Africa and South America developing long, narrow skulls
 - D. The distribution of *Aloe dichotoma* starting to move southward with global warming
4. The most likely explanation for the extinction of the dinosaurs is:
 - A. predation
 - B. glaciation
 - C. acid rain
 - D. the effects of a giant asteroid hitting the earth
5. An example of non-random mating is
 - A. artificial selection
 - B. inbreeding
 - C. natural selection
 - D. macroevolution
6. You are a fossil hunter. Which of the following are you least likely to find in a fossil?
 - A. Bone
 - B. Leaves
 - C. Teeth
 - D. Muscles

(6)

Question 2: 5 Minutes

(Taken from DoE Preparatory Examination 2008 Paper 2)

Give the correct biological term for each of the following descriptions. Write only the term next to the question number (1.2.1 – 1.2.5) on your sheet.

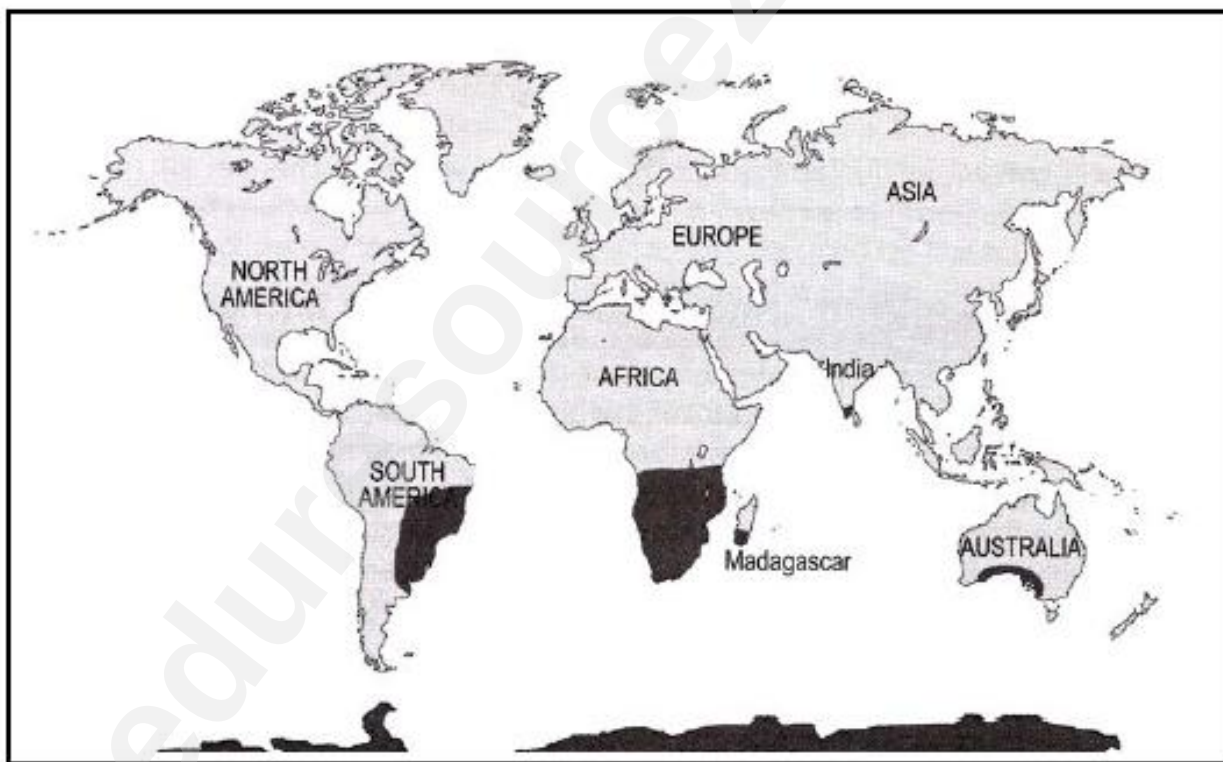
- 2.1. A document that lists species that are endangered, i.e., under threat or near extinction
- 2.2. Small genetic changes that occur within a single species
- 2.3. The chemical compound that breaks down the ozone layer in the atmosphere
- 2.4. The variety of species in a particular environment, habitat, ecosystem or region
- 2.5. The mating of unrelated individuals from different populations to introduce new dominant genes and increasing the gene pool

(5 x 1) (5)

Question 3: 4 Minutes

(Taken from DoE Preparatory Examination 2008 Paper 2)

The map below shows places where fossils of *Glossopteris* were found. *Glossopteris* is an extinct terrestrial animal without wings. The fossils of *Glossopteris* are only found in the regions coloured in black.

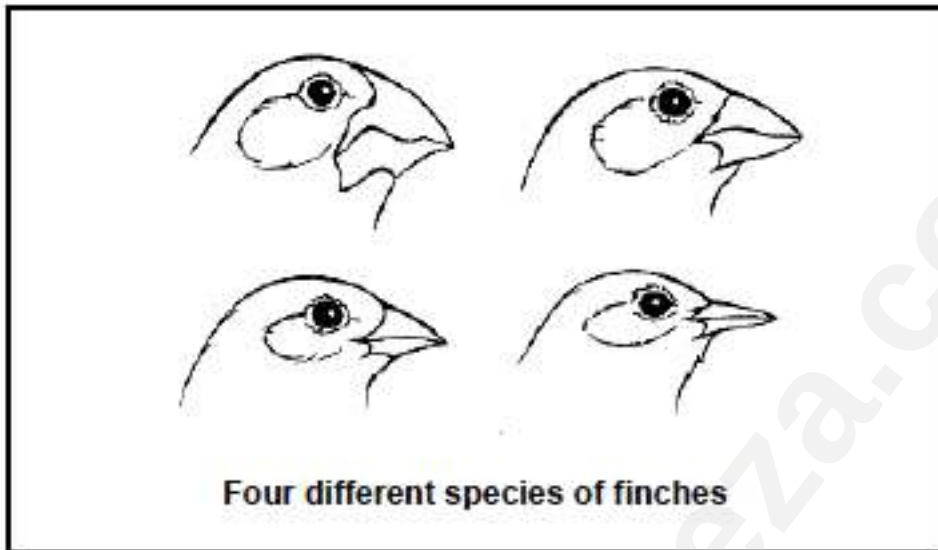


Describe how scientists explain the distribution of this animal over the different continents.

(4)

Question 4: 14 Minutes*(Taken from DoE November 2009)*

The diagrams below show the heads of four of the many species of finches inhabiting different islands in the Galapagos group, some 1 000 km from South America. The number of species of finches on the South American mainland is fewer than that found on the islands.



- 4.1. Explain ONE possible reason for the differences in the shape of the beaks. (2)
- 4.2. According to Darwin, these finches probably descended from a common ancestral finch species. Give a geological explanation of how this ancestor probably came to be on these islands. (2)
- 4.3. Describe how new finch species were formed on the different islands. (7)
- 4.4. Explain why there is a lower species diversity of finches on the South American mainland than on the islands. (3)

Question 5: 9 Minutes*(Taken from DoE November 2009)*

Both Darwin and Lamarck proposed theories to explain the origin of new species.

- 5.1 State the FOUR observations upon which Darwin based his theory. (4)
- 5.2 Tabulate TWO differences between Lamarck's and Darwin's theories. (5)

SECTION D: HOMEWORK

Learner Note: As you attempt the homework, you MUST stick to the time frames. If you get stuck refer to either the additional notes or your class teacher.

Question 1: 3 minutes*(Taken from WCED September 2009 Paper 2)*

Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A – D) next to the question number.

- 1.1 Extinction of species CANNOT occur as a result of ...
 - A disease
 - B competition
 - C fossilisation
 - D volcanic eruptions
- 1.2 The theory of evolution based on the principle of use and disuse was proposed by ...
 - A Darwin.
 - B Lamarck.
 - C Mendel.
 - D Hardy and Weinberg.
- 1.3 Which ONE of the following is INCORRECT?
 - A Fossils are found in all types of rock.
 - B Scientists are able to work out the age of fossils.
 - C Fossils give information about the relationship between living and extinct life forms.
 - D Fossils are the preserved remains of living organisms. (3)

Question 2: 5 Minutes *(Taken from WCED September 2009 Paper 2)*

Give the correct biological term for each of the following descriptions. Write only the term next to the question number.

- 2.1 Individuals with favourable traits are the most likely to survive and reproduce and pass on those traits.
- 2.2 The list of organisms that are threatened with extinction.
- 2.3 A diagram that shows possible evolutionary relationships between groups of organisms.
- 2.4 Small changes that occur within species.
- 2.5 Study of plant- and animal fossils (5)

Question 3: 6 Minutes

(Taken from WCED September 2009 Paper 2)

Choose an item from COLUMN II that matches a description in COLUMN I. Write only the letter (A-J) next to the question number on your answer sheet.

COLUMN I	COLUMN II
3.1 Reduce variation in offspring.	A alien species
3.2 The <i>Homo-species</i> referring to as modern man.	B <i>Homo habilis</i>
3.3 A species that is introduced to an area where it did not naturally occur in the past.	C vestigial
3.3 Remainder of a body structure inherited but totally unused and inconspicuous.	D inbreeding
3.5 Study of ancient man and its culture.	E <i>Homo sapiens</i>
3.6 The total aggregate of genes in a population at any one time	F anthropology
	G gene pool
	H archaeology
	I endangered species
	J outbreeding

(6 x 1) (6)

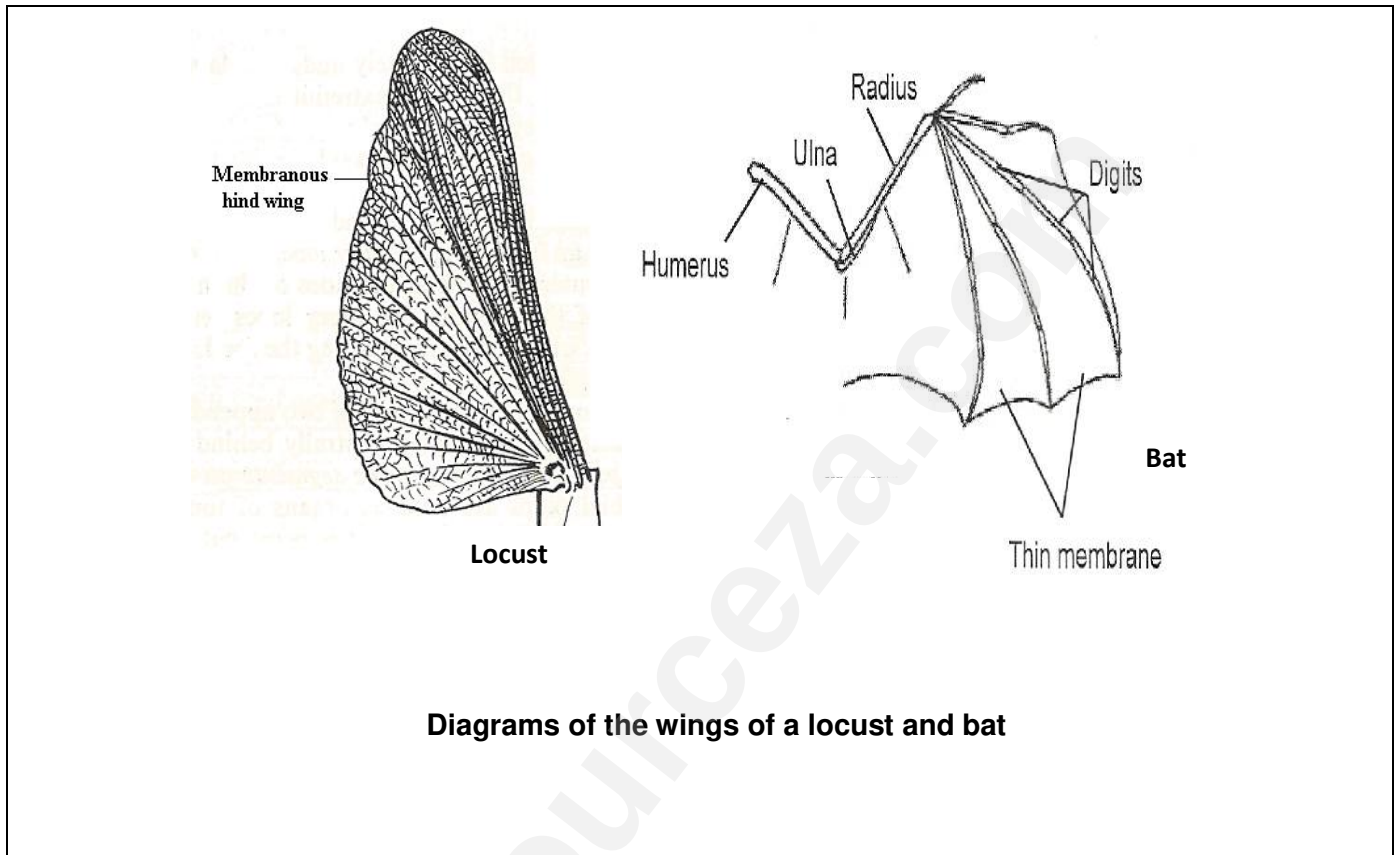
Question 4: 6 Minutes

(Taken from WCED September 2009 Paper 2)

- 4.1 The rise of humans has been meteoric. What features of humans account for this success? (3)
- 4.2 Why is the Kromdraai area west of Johannesburg known as the "Cradle of Mankind"? (1)
- 4.3 Fossil remains of early man are comparatively rare. Why is this so? (2)

Question 5: 5 Minutes*(Taken from WCED September 2009 Paper 2)*

Study the diagrams of the wings of a locust (an insect) and a bat as shown below.



- 5.1 Are the above examples of homologous or analogous structures? (1)
 5.2 Explain your answer to QUESTION 1.6.1 (2)
 5.3 State TWO ways in which the wing of the bat is adapted for flying. (2)

SECTION E: SOLUTIONS TO SESSION 27 HOMEWORK
--

Question 1:

- 1.1 Continental drift ✓
 1.2 Radiometric ✓/Carbon/Absolute/Radiocarbon
 1.3 Palaeontology ✓
 1.4 Fossil fuels ✓
 1.5 Variation ✓
 1.6 Fossils ✓
 1.7 Vestigial structures ✓
 1.8 Phylogenetic tree ✓/cladogram/phylogeny
 1.9 Mutation ✓
 1.10 Crossing over ✓

Question 2:

- 2.1**
- There was variation✓ with regard to the feet within the ancestral duck populations
 - Some ancestral ducks had skin✓ attached between the toes
 - As food became scarce✓/environment changed
 - Competition for food increased✓
 - Those ducks which had skin attached between their toes✓/ desired characteristic could swim better
 - To secure food and survived✓
 - Those ducks that did not have skin attached between their toes were unable to swim well✓
 - Did not secure food and died✓
 - Through natural selection entire populations✓ of ducks with webbed feet evolved any (7)
- 2.2.1.** If you use organs/structures repeatedly✓ it develops✓/ and organs and structures that are not used✓, disappear✓
Acquired✓ characteristics are inherited✓ (4)
- 2.2.2** Acquired characteristics✓ are not inherited✓/only characteristics that are controlled by the genes✓ are inherited✓ (2)

SECTION F: SOLUTION TO CONSOLIDATION SESSION 27 QUESTIONS**Question 1:**

- 1.1 A
- 1.2 C
- 1.3 C
- 1.4 C (4)
- 2.1 They have the same✓ index✓ fossils (2)
- 2.2 5 ✓and 12 ✓ (**Mark first TWO only**) (2)
- 2.3 Radiometric dating✓/ Relative dating/ Absolute dating/ Carbon dating/ Isotope(carbon/uranium/potassium) dating/ Radio active dating (1)
- 2.4
- Conditions for fossilisation to take place were not always favourable✓
 - All fossils NOT found yet✓
 - All organisms are not fossilised✓/some are eaten by predators/some decay quickly
 - Incomplete fossils✓
 - Problems in identifying fossils✓
- (**Mark first TWO only**) any (2) [7]

- 3.1
- Whales evolved from a four-limbed terrestrial✓ ancestor
 - There was variation in the appearance✓ of the whales
 - Some ancestral whales became aquatic✓
 - Whales with smaller hind limbs could swim well✓
 - and escape predators✓/find food in deeper water and further in the ocean
 - Those with larger hind limbs did not swim well✓ and could not reach food/escape from predators
 - and, therefore, did not survive✓
 - Through natural selection, more whales with smaller hind limbs survived✓
 - Over many generations whales with smaller and smaller hind limbs✓ survived in greater numbers
- (any 5) (5)
- 3.2 The genes✓ are still present✓ in the species (for the vestigial hind limbs)
- OR
- The vestigial structure is no longer✓ an advantage✓/disadvantage
- (2) [7]
- 4.1 (Accept any answer from) 55 – 60 ✓million years ago ✓/mya (2)
- 4.2 Permian✓ extinction (1)
- 4.3 $400✓ - 200✓ = 200✓$ families of species
- OR
- $400✓ - (210 \text{ to } 230) \quad ✓ = (190 \text{ to } 170) \quad ✓$ families of species (3) [6]
- 5.1
- Upright posture✓
 - Long upper arms✓
 - Freely rotating arms✓
 - Elbow joints allowing rotation of forearm✓
 - Rotate hands at least 180° ✓
 - Flat nails instead of claws✓/bare finger tips
 - Opposable thumbs✓ which work in opposite direction to their fingers
 - Large brains/skulls compared to their body mass✓
 - Eyes in front✓/binocular vision/stereoscopic vision
 - Eyes with cones✓/colour vision
 - Sexual dimorphism✓/distinct differences between male and female
 - Olfactory brain centres reduced✓/reduced sense of smell
 - Parts of the brain that process information from the hands and eyes are enlarged✓
 - Two mammary glands only✓
- (Mark first FOUR answers only in learner's script)** any (4)

5.2.

<i>Homo sapiens</i>	<i>Other primates</i>
1. Larger cranium✓/brain	1. Smaller cranium ✓/brain
2. Flat face✓/ Forehead slope less backwards	2. Face sloping✓/ Foreheads slope much backwards
3. Foramen magnum forward✓/bottom of the skull	3. Foramen magnum at the back of the skull✓
4. Brow ridges are not as pronounced✓	4. Brow ridges pronounced✓
5. Smaller canines✓	5. Larger canines✓
6. Smaller spaces between the teeth	6. Larger spaces between the teeth
7. Jaws with teeth on a gentle/round curve✓	7. Jaws with teeth in a rectangular/U shape✓
8. Less protruding jaws✓	8. More protruding jaws✓/ prognathous
9. Lower jaw has a well developed chin✓	9. Lower jaw has poorly developed chin✓

(Mark first FOUR answers only in learner's script)

(any 4 x 2 = 8 + 1 for table)

(9)

- 5.3.
- Gill slits✓/arches are found in all the vertebrate embryos
 - A tail✓ is found in all the vertebrate embryos
 - Notochord✓
 - Fish-like/tubular heart✓

(Mark first TWO answers only in learner's script)

(2)

[15]