Assessment Schedule – 2005

Biology: Describe trends in human biological and cultural evolution (90719)

Evidence Statement

Q	Achievement	Achievement with Merit	Achievement with Excellence
1(a)	Describes a feature of the skull that would show that *Homo floresiensis* walked upright Eg: • Foramen magnum underneath the skull • occipital condyles underneath the skull / pointing down • Small nuchal crest / neck muscle attachment area.		

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1(b)	Describes a feature of *Homo floresiensis* that shows it is a member of the genus *Homo* (i.e. compared to earlier hominins) Eg: • teeth small, similar to the genus *Homo* • has the narrow nose associated with the genus *Homo* • brain case proportionately larger compared to earlier hominins (like genus *Homo*) • brow ridge less prominent than that of earlier hominins • reduced muzzle / prognathism similar to genus *Homo* • flat face similar to the genus *Homo* • position of foramen magnum similar to that of genus *Homo* • size of nuchal crest small, similar to that of genus *Homo* **OR** that it is more like *Homo erectus* / not like *Homo sapiens.* Eg: • low brain case more like *H. erectus* • more prominent brow ridge more like *H. erectus* • no prominent chin unlike *H. sapiens* • has a proportionally wider zygomatic arch / cheek bone similar to *H. erectus* • size of jaw/teeth/molars larger than *H. sapiens.*	Explains a feature of *Homo floresiensis* that shows it is a member of the genus *Homo* **OR** that it is more like *Homo erectus* / not like *Homo sapiens.* Eg: • The teeth are small which is similar to the genus *Homo.* The Australopithecines, and present-day apes, have large teeth because they have a different diet. • Has a brow ridge which is not as prominent as the earlier hominins because *H. floresiensis* eats different food and the skull needs less buttressing. • *Homo floresiensis* skull shown has a low and broad brain case of a similar shape to *Homo erectus*, / not as rounded and high as *Homo sapiens*: which has a very large frontal region to the brain. • Zygomatic arches larger than *H. sapiens* because of differences in diet / food processing.	Discusses why a feature demonstrates that it is a member of the genus *Homo* **OR** why it is more like *Homo erectus* than *Homo sapiens* Makes links between the feature and the evolutionary trend Eg: • Members of the *Homo* genus have a smaller brow ridge than earlier hominins. As the evolution of hominins progressed, they ate a higher proportion of more refined foods such as meat instead of coarse foods such as root tubers. Later *Homo* species also cooked their food, further refining the food they ate. As food became less coarse, less grinding of food by teeth was required and the strain of chewing on the skull decreased. Therefore the skull required less structural support from the brow ridge, which diminished in size. *Homo floresiensis* has a brow ridge which is similar in size to other members of the *Homo* genus and not as prominent as that of the hominins prior to *Homo* genus eg *Australopithecus*. This supports the conclusion that *Homo floresiensis* belongs in the *Homo* genus. • *Homo erectus* has larger zygomatic arches than *H. sapiens*. *H. sapiens* ate a higher proportion of more refined foods such as meat instead of coarse foods such as root tubers. As food became less coarse, less grinding of food by teeth was required and the chewing muscles which pass through the zygomatic arches decreased in size. Therefore the zygomatic arches themselves diminished in size. *Homo floresiensis* has zygomatic arches that are similar in size to *H. erectus* and more prominent than those of *Homo sapiens*. This supports the conclusion that *Homo floresiensis* is more closely related to *H erectus* than *H. sapiens*.

Q	Achievement	Achievement with Merit	Achievement with Excellence
1(c)	Describes that Upper Paleolithic tools are associated with *Homo sapiens/neanderthalensis* **AND** that you would expect *Homo floresiensis* to be associated with Acheulean tools.	Explains that the brain size of *H. floresiensis* is too small to make complex tools **OR** *Homo floresiensis* is more closely related to / more closely resembles *H. erectus* (than *H. sapiens)* and *H. erectus* used Acheulean tools.	
1(d) (i)	Describes the function of Wernicke's area as the recognition / comprehension of **spoken words.** Not 'communication'.		
1(d) (ii)	Describes that coordinated hunting / hunting in groups needs good communication.	Explains communication allows reduction of risk / increased success / increased effectiveness.	
1(e)	Describes that the **ancestors** of *Homo floresiensis / H. erectus* used fire. Ie trends in evolution.	Explains that ***Homo erectus*** used fire and they are the ancestors of *Homo floresiensis* so they would be expected to use it too.	
1(f)	Describes 'S'-shaped.		

Q	Achievement	Achievement with Merit	Achievement with Excellence
2(a)	Describes **EITHER** the 'Out of Africa' / Replacement Theory / Hypothesis **OR** the multiregional theory Eg: *(H. erectus)* migrated out of Africa, formed populations that were not completely isolated in (Europe, Asia and Africa). ***H. sapiens* / modern humans** evolved from these linked populations. **OR** *(H. erectus)* migrated out of Africa and formed populations in (Europe, Asia and Africa). *H. sapiens* / modern humans evolved in Africa and dispersed into Europe and Asia, replacing (*H. erectus)* ie **2 waves described**.	Answer identifies which theory the information supports / explains why Eg: The pattern shown by the diagram supports the 'Out of Africa' theory because the diagram shows that: • *H. erectus* moved into Asia (and other *Homo* species moved into Europe): • The origin of *H. sapiens* was in Africa: • *H.sapiens* moved out of Africa: • The other *Homo* species eg *H. erectus* became extinct **which** are consistent with the 'Out of Africa' theory. **OR** Eg: The pattern shown by the diagram does not support the 'Multiregional' theory because the diagram does not show that: • The populations of *H. erectus* were not completely isolated : • *H.sapiens* evolved simultaneously / in paralell in different regions **which** are consistent with the 'Multiregional' theory. **OR** Eg: The pattern shown by the diagram supports the 'Multiregional' theory / does not support the 'Out of Africa' theory because the diagram shows that: • The populations of *H. floresiensis* and *H. sapiens* were not necessarily genetically isolated: • *H.sapiens* may have evolved independently in different regions **which** are consistent with the 'Multiregional' theory / not consistent with the 'Out of Africa' theory.	Discussion identifies that the information supports the 'Out of Africa Theory', and explains why **AND** does not support the multiregional theory and explains why. Eg: The pattern shown by the diagram supports the 'Out of Africa' theory because the diagram shows that: • *H. erectus* moved into Asia approx. 1mya (and other *Homo* species moved into Europe): • The origin of *H. sapiens* was in Africa: • *H.sapiens* moved out of Africa: • The other *Homo* species e.g. *H. erectus* became extinct **which** are consistent with the 'Out of Africa' theory. **AND** The pattern shown by the diagram does not support the 'Multiregional' theory because the diagram does not show that: • The populations of *H. erectus* were not completely isolated : • *H.sapiens* evolved simultaneously / in paralell in different regions **which** are consistent with the 'Multiregional' theory. **OR** Eg: The pattern shown by the diagram supports the 'Multiregional' theory **and** does not support the 'Out of Africa' theory because the diagram shows that: • The populations of *H. floresiensis* and *H. sapiens* were not necessarily genetically isolated: • *H.sapiens* may have evolved independently in different regions **which** are consistent with the 'Multiregional' theory **and** not consistent with the 'Out of Africa' theory.

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2(b) (i)	Describes a cultural change brought about by agriculture and the domestication of plants and animals. Eg: • development of settlements / towns / cities • less nomadic • increased care for animals • improved health/nutrition • better housing • division of labour • development of technologies incl. tools / commerce / communication / politics / transport • **increased development** of new ideas such as the written language / education / religion • **increased socialising.**		
2(b) (ii)	Describes a disadvantage of agriculture to *Homo sapiens.* Eg: • crops all matured at the same time • **group vulnerable to loss of food** by bad harvest caused by eg weather / diseased crops • conflict over ownership of resources • become reliant on agricultural skills • need to stay in one place / more dense population • increased specialisation • disease / parasites from animals.	Explains a disadvantage of agriculture to *Homo sapiens.* Eg: • storage required, wastage could occur • may have led to starvation or nutrition deficiency diseases • fighting over ownership of good growing land / animals would lead to injuries / the need for guard role / reduced labour force • whole group vulnerable to starvation or nutrition deficiency diseases if agricultural system breaks down eg drought / crop disease • difficulty in disposing of waste / using up resources / inability to follow migratory animals / spreading disease • lose ability to survive individually • reduced health.	

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Total of FIVE opportunities answered at Achievement or higher. 5 × A	Total of SEVEN opportunities answered with THREE at Merit level or higher. 3 × M + 4 × A	Total of EIGHT opportunities answered with at least ONE at Excellence level *and* THREE at Merit level. 1 × E + 3 × M + 4 × A