Assessment Schedule – 2005

Biology: Describe diversity in the structure and function of animals (90462)

Evidence Statement

Q	Achievement	Achievement with Merit	Achievement with Excellence
1	**Description of the purpose of the biological process** **Eg Internal transport.** All animal cells require a constant supply of nutrients and oxygen and a continuous removal of wastes to function. This is carried out by an internal transport system which consists of a pump and blood vessels carrying blood. **(Not for credit)**		
2 (a), (b)	A **description** of "what the structure is AND how it works (function)" to show diversity in THREE named animal groups. **A1, A2, A3.** *Evidence may come from EITHER part (a) OR part (b).*	An **explanation** of how the structures AND functions are linked to the environment / habitat / lifestyle / niche for each named animal group. M *Evidence may come from EITHER part (a) OR part (b).*	2(b) A **discussion** (justifying, comparing and contrasting) of the diversity of the structures and functions which enable animal groups to live in their **environment**. **Diversity in animal groups. E** *Evidence may come from EITHER part (a) OR part (b).*
	Transport: What the <u>structure</u> is Eg • open circulatory system • closed single system • closed double system **How it works** ie description of <u>function</u> Eg • carries O_2 and food, wastes, water, hormones, • valves to prevent backward flow • muscle action / movement to assist flow. **Gas Exchange:** What the structure is Eg • diffusion in invertebrates • tracheal system • gills / counter-current • lung system / diaphragm. **How it works** (function) Eg • All animals must exchange gases with environment to carry out respiration. • Diffusion • "Pump" to move medium.	**Transport:** Explanation linking structure and function to environment / habitat / niche Eg • surface area • diffusion rate Activity / energy requirements Pressure / gravity Size of animal / blood volume • terrestrial / aquatic • Insects, gas exchange system separate to transport. Efficiency / effectiveness **Gas Exchange:** Explanation <u>linking</u> structure and function to environment / habitat / niche Eg • surface area • moist exchange surfaces • pressure • supply. Short diffusion distance.	**Transport:** Discussion of diversity in structure and function to survive in different environments. Eg Relates the efficiency of closed double circulatory system and diversity of habitats to more restricted habitats of open circulatory system. Size of animal has a direct bearing on what system it has. **Gas Exchange:** Eg raw materials available from different mediums, oxygen from air or water. Challenge of different environments and metabolic requirements. Animal groups show diversity to solve requirements and metabolism. For a fish, tracheal system would be too heavy, while lungs would require vast amounts of water to extract sufficient oxygen.

Q	Achievement	Achievement with Merit	Achievement with Excellence
2 cont.	**Nutrition:** What the structure is, eg • omnivore • carnivore • herbivore – foregut • herbivore – hindgut • beaks / teeth / insect mouthpart. **How it works (function)** Eg Animals are consumers and must extract and absorb nutrients • physical / chemical digestion • purpose of dentition types • ruminants – micro-organisms • absorption. **Excretion:** What the structure is, eg • an invertebrate system • an aquatic system • a terrestrial system • products. **Function:** Eg Osmoregulation, removal of toxic nitrogen containing compounds. **Support and movement:** What the structure is, eg • hydrostatic system • exoskeleton • endoskeleton • flight • swimming. **Function:** Eg Locomotion – to escape predators, find food, find mates. Antagonistic pairs, muscle types, contraction / relaxation of muscles, flexible body movements. **Sensitivity and co-ordination:** What the structure is, eg Receptors / sensing organs for stimuli Motor neurones / sensitivity neurones Response to stimuli • correlation to body symmetry, eg echinoderm, insect, squid • vertebrate central NS. **Function** (how it works), eg Control and coordination of internal processes, sensing and responding to stimuli. Nervous, endocrine system.	**Nutrition:** Explanation linking structure and function to environment / habitat / niche, eg size of absorptive surface Method of transport • Energy / nutrient requirements • Food types • Beaks / no teeth / weight / crop instead. • Specialist regions in gut. **Excretion:** Explanation <u>linking</u> structure and function to environment / habitat / niche Eg • excretory products • energy efficiency. **Support and movement:** Explanation <u>linking</u> structure and function to environment / habitat / niche Eg • size • shape • limitations of different media. **Sensitivity and co-ordination:** Explanation linking structure and function to environment / habitat / niche Eg • vertebrate NS highly centralised and encephalised – animals able to grow larger. • invertebrae NS related to body symmetry.	**Nutrition:** Eg Diversity related to types of food / body shape or size / energy requirements. Type of system is due to diet available. **Excretion:** Eg Diversity shown is related to the excretion product / energy cost of production in the environment. Challenges of environment eg arid, bird in flight – no urine, water conservation. **Support and movement:** Eg Endoskeletons; bones, wings adapted for flight, limitation of size for terrestrial animals with exoskeletons. **Sensitivity and co-ordination:** Eg Diversity related to survival in environment and interaction with endocrine system to maintain homeostasis.

Q	Achievement	Achievement with Merit	Achievement with Excellence
2 cont.	**Reproduction:** What the structure is and how it works Eg hermaphrodite • asexual – parthenogenesis • sexual – fertilisation – internal external • complex reproductive systems, eg insects. **Function** Eg Extinction if die from old age disease / predation and are not replaced. Gamete formation, zygote, mitosis, meiosis.	**Reproduction:** Explanation linking structure and function to environment / habitat / niche Eg • external / internal fertilisation • external / internal development • behavioural adaptations for mating.	**Reproduction:** Eg Diversity related to number of offspring produced and survival in environment. • Level of parental care related to number of offspring. • Sexual reproduction ensures variation.

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Structure and function of each of THREE named animal groups. A1, A2, A3.	Structure and function linked to environment / niche. Achievement *plus* M.	Discussion of diversity to survive in environments. Merit *plus* E.