DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Curriculum Management and eLearning Department
Educational Assessment Unit

Track 2

Annual Examinations for Secondary Schools 2014

FORM 3 BIOLOGY MARKING SCHEME

Section A

1a. i. brine-shrimp (*Accept* shrimp) 1 mark

ii. liver 1 mark
Accept beak

b. Protection from predators/avoiding predators; maximizing food intake; using scarce suitable nesting sites more efficiently. 1 mark
Any ONE

c.

Kingdom	Animalia
Phylum	Chordata
Class	Birds
Order	*Phoenicopterformes*
Family	*Phoenicopteridae*
Genus	*Phoenicopterus*

0.5 mark for each correct taxonomic term – 2 marks

d. Less exposure to snakes' own predators OR more efficient for snake since it cannot move faster than its prey. 1 mark

Total: 6 marks

2a. Name: Earthworm 1 mark
Structural feature: presence of segments 1 mark

b. Worms eat some soil and digest any plant remains in it. This is finely ground up inside them and when they deposit it back in the earth, it is good for the soil's texture. Some worms leave it on soil as worm casts and this helps to mix the different layers of soil. 1 mark

c. Clay soil 1 mark

d. Waterlogged soil is short of oxygen so roots and other organisms cannot carry out aerobic respiration. 2 marks

e. Sporangia 1 mark
Accept spores

f. To aerate the soil OR easier for root growth. 1 mark
Accept: to mix soil levels

g. i. Fungi spread hyphae onto the dead/decaying matter, produce juices containing enzymes that dissolve/act on the decaying matter. 2 marks
Accept: external digestion of organic matter.

ii. Release of minerals in soil. 1mark
Accept: breaking down of dead organisms/decomposition
Do NOT accept formation of humus

Total: 11 marks

3a. The shoot tip is the part that detects the stimulus. 1 mark

b. The shoot tip placed on agar grows towards the light source while the shoot tip placed on the metal disc shows no growth. 2 marks

c. Receives light more efficiently for photosynthesis. 1 mark

d. Asexual reproduction 1 mark

e. i. Movement of water from a high concentration of water to a lower concentration of water along a diffusion gradient. 2 marks
ii. Contractile vacuole 1 mark
iii. It bursts 1 mark

Total: 9 marks

4a. **A**: testa/seed coat **D**: radicle 1 mark each – 2 marks

b. **C** 1 mark

c. This allows the germinating seed and young seedling more time to grow and become established before it begins manufacturing its own food. Therefore a better chance of survival. 2 marks

d. **X**: Wind dispersal – Light fluffy parachute like structures 2 marks

Y: Animal dispersal – Hooks attach fruit to animal's fur 2 marks

Total: 9 marks

5a. Herbivore – an animal that gets its energy from eating plants. 1 mark

b. Enables louse to lie close to organism for attachment/feeding 1 mark

c. Rod shaped bacterium 1 mark

d. Presence of cell wall. 1 mark

e. Statement is incorrect. 1 mark
Only bacteria can be observed using the light microscope. Viruses are much smaller than bacteria and are only visible with an electron microscope. 2 marks

f. To digest the tough cellulose walls present in the grass they feed on. 1 mark

Total: 8 marks

6a. i. Y ii. X iii. X iv. Y (1, 1, 1, 1 mark)

b. i. B ii A (1, 1 mark)

Total: 6 marks

7. **A** – Sensitivity (*accept* – irritability/responding to stimuli)
Organisms respond to stimuli such as heat, touch, light and sound. 2 marks

B – Movement
Animals move arms and legs by means of muscles. 2 marks

C – Growth
An animal or plant develops and it gets larger and heavier – in this growth process its volume and mass increase. 2 marks

Total: 6 marks

Section B

1a. Frogs 1 mark

b. Mammals 1 mark

c. Disruption of food chain if biological control organism is invasive; slow process; pest is not completely eradicated. 2 marks
Any ONE

d. Other harmless organisms will be affected (eg. insect larvae and other insects) by the pesticide. 2 marks

e. Presence of fins; streamlined body; swim bladder. 2 marks
Accept Lateral line
Any TWO

f. Fish are ectothermic. 1 mark

g. Availability of resources; overcrowding; disease; accumulation of toxic wastes; interspecific competition.
Accept Climate/natural disasters. 2 marks each – 4 marks
Any TWO

h. Many out-run/out-swim/out-fly; stinging/taste horrible; possession of warning colours; shock tactics; mimicry
Any ONE 2 marks

Total: 15 marks

2a. Molluscs 1 mark

b. i. Keeps feathers waterproof. 2 marks
Accept reduction of friction thus helping penguins to glide smoothly through the water.

ii. Penguins living in cold regions are larger in size than penguins living in warmer regions. 2 marks

c. This allows them to cool down on a hot day. Heat can flow away from the flippers from the increased surface area. 2 marks

d. Reduced insulation – greater heat loss. 2 marks

e. Eight legs; body divided into two parts
Accept no antennae/ no wings 2 marks

f. Advantage: Not being dependent on pollinating agents; helps to keep advantageous traits in the species; self pollination helps to propagate plants when number of flower is small.
Any ONE 2 marks

Disadvantage: Less variety of offspring; less adapted to changes in the environment; offspring make become weaker, smaller and less resistant to disease. 2 marks
Any ONE

Total: 15 marks

3a. Some plants such as bryophytes are non-vascular plants (lack phloem and xylem). 2 marks

b. Some animal cells such as the red blood cell lacks a nucleus. 2 marks

c. Only sexual reproduction gives rise to genetically different organisms. Asexual reproduction like budding and binary fission result in genetically identical offspring. 2 marks

d. Only monocotyledons have long narrow leaves with parallel veins running through them; dicots have broad leaves with branching veins. 2 marks

e. The skin also acts as a sense organ for the body and thermoregulator. 2 marks

f. Blood is not an organ but a tissue. 2 marks

g. Chlorophyll is only present in the green parts of the plant/parts above the ground. Underground parts lack chlorophyll. 3 marks

Total: 15 marks

4a. Nitrogen fixing bacteria present in root nodules. 2 marks

b. i. Above the ground. 1 mark

ii. Lack of water; lack of suitable temperature; lack of oxygen; seeds sown too deep in the soil.
Any TWO 2 marks

c. Less photosynthesis occurring therefore soybean plants grow smaller in size. 1 mark

d. Phloem 1 mark

e. i. Anther 1 mark
Do NOT accept stamen.

ii. *Labelled diagram – with the following labels* ovary and pollen tube 3 marks

iii. Wind pollinated plants have very light pollen grains with smooth surfaces while insect pollinated flowers have heavier pollen grains with sticky surfaces. 2 marks

iv. Wind pollinated flowers do not produce nectar. Only insect pollinated flowers produce nectar. 2 marks

Total: 15 marks

5a. Male cone 1 mark

b. Naked seeds/ seeds in cones/seeds not enclosed in an ovary 1 mark

c. Reduced surface area so limited water loss. 2 marks

d. i. Photosynthesis 1 mark

ii. Hyphae 1 mark

iii. *Labelled diagram including the labels*: sporangium and spores. 4 marks

iv. No detachment from host. 1 mark

e. i. Yeasts are unicellular. 1 mark

ii. Budding 1 mark

iii. Rapid process; numerous offspring produced in a short time span; does not need to search for partner. 2 marks
Any ONE

Total: 15 marks