Biology Sample Paper 1 Answer Key

1. D. Carbon dioxide in human cells
2. B. Contraction of the left ventricle.
3. D. Longer small intestine.
4. C. Posture and balance.
5. D. Sex is not genetically determined in snails.
6. C. It utilizes 10% of light energy and transfers the rest to the next trophic level.
7. B. Enrichment of oxygen in the atmosphere.
8. B. Both A and R are true, and R is not the correct explanation of A
9. D. A is false but R is true.

10.

FEATURE	ALVEOLI	NEPHRON
Structure and location	Balloon-like structures present at the terminal ends of bronchioles in the lungs	Tubular structure present in kidneys
Functions	Exchange of gases	Filtration of blood to form urine

11. Students to attempt either option A or B.
A. Steps of synthesis of glucose in plants:
· Absorption of light energy by chlorophyll
· Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen
· Reduction of carbon dioxide into carbohydrates.
· Desert plants take up carbon dioxide at night and prepare an intermediate which is acted upon by the energy absorbed by the chlorophyll during the day. (0.5 x 4)

OR

B.
Salivary amylase – breaks down starch which is a complex molecule of sugar.
Pepsin – Helps to digest proteins in the stomach.
Trypsin – It helps in digesting proteins into amino acids.
Lipase – Breaking down of emulsified fats to fatty acids and glycerol. (0.5 x 4)

12. Pesticides are non-biodegradable/ keep accumulating at each trophic level, / persist for a longer time/ and thus last trophic level has the highest concentration/ humans will have the highest concentration of pesticides/leading to bio-magnification. (any 2 points)

13. In plants, the water is absorbed by the plants from the soil through the roots. Xylem tissue of the roots, stems and leaves are interconnected to form a continuous system of water-conducting channels. (1)
During the day, when stomata are open, the transpiration pull becomes the major driving force for the movement of water in the xylem. (1)
Evaporation of water molecules from the stomata creates a suction that pulls water from the xylem cells of roots to the stem and then to the leaves. (1)

14. (Any letter which indicated dominant and recessive ears, for example, L or E or any other)
A.

LL × ll
F1= Ll
Ll X Ll
1LL:2Ll:1ll. (2)

B. No change in ratio/the ratio of F2 generation will still be 1LL:2Ll:1ll/ ratio will be the same.
The cross is still between a pure dominant and recessive allele/ genes/ traits/characters /as shown in the cross above. (1)

15. Students to attempt either option A or B.
A.
(i) Vegetative propagation/ asexual reproduction. (0.5+0.5)
(ii) More crops in same time interval, genetically identical, flower fruit faster, no need to depend on pollinators. (1+1)
(iii) Cross-pollination, the pollen from anther will be transferred to the stigma of another banana plant using agents like wind, water, insects, etc. (0.5+0.5)
(iv)There would be minor changes/some variation during the process of copying of the DNA. (1)

16. Students to attempt either subpart A or B.
A.
The bending of shoots of plants is a response to the stimulus and a directional, growth-related movement.
When growing plants detect sunlight, a hormone called auxin, synthesized at the shoot tip helps the cells to grow longer.
When light is coming from one side of the plant, auxin diffuses to the shady side of the shoot.

This concentration of auxin stimulates the shoot cells to grow longer on the side of the shoot which is away from the light. Thus, the plant appears to bend towards the light. (0.5 x 4 =2)

OR

B.

Leaves of the 'Touch me not' plant respond to the stimulus by showing growth-independent movement.

These plants use electrical–chemical means to convey the information from cell to cell.

Movement happens at a point different from the point of touch.

Plant cells change shape by changing the amount of water in them, resulting in swelling or shrinking, and therefore in changing shape. (0.5 x 4 =2)

C. Growth of pollen tubes towards the ovule is an example of chemotropism whereas bending of shoots towards sunlight is an example of phototropism. (1)

D.

i) Although both plants and animals show electrical–chemical means to convey information from cell to cell unlike nerve cells in animals, there is no specialized tissue in plants for conduction of information. (0.5)

ii) In animal cells, change in shape occurs because of the specialized proteins found in muscle cells; plant cells change shape by changing the amount of water in them. (0.5)