**IB HL Biology II – Seniors Semester I**

**Topic 9 Plant biology**

**Topic 9: Plant structure and growth**

1. Draw and label plan diagrams to show the distribution of tissues in the stem and leaf of a dicotyledonous plant.
2. Outline three differences between the structures of dicotyledonous and monocotyledonous plants.
3. Explain the relationship between the distribution of tissues in the leaf and the functions of these tissues.
4. Identify modifications of roots, stems and leaves for different functions: bulbs, stem tubers, storage roots and tendrils.
5. State that dicotyledonous plants have apical and lateral meristems.
6. Compare growth due to apical and lateral meristems in dicotyledonous plants.
7. Explain the role of auxin in phototropism as an example of the control of plant growth.

**Topic 9: Transport in Angiospermophytes**

1. Outline how the root system provides a large surface area for mineral ion and water uptake by means of branching and root hairs.
2. List ways in which mineral ions in the soil move to the root.
3. State that terrestrial plants support themselves by means of thickened cellulose, cell turgor and lignified xylem.
4. Define transpiration.
5. Explain how water is carried by the transpiration stream, including the structure of xylem vessels, transpiration pull, cohesion, adhesion and evaporation.
6. State that guard cells can regulate, by means of hormones, transpiration by opening and closing stomata.
7. State that the plant hormone abscisic acid causes the closing of stomata.
8. Explain how the abiotic factors light, temperature, wind and humidity, affect the rate of transpiration in a typical terrestrial plant.
9. Outline four adaptations of xerophytes that help to reduce transpiration.
10. Outline the role of phloem in active translocation of sugars (sucrose) from source (photosynthetic tissue and storage organs) to sink (fruits, seeds, roots).

**Topic 9: Reproduction in Angiospermophytes**

1. Draw and label a diagram showing the structure of a dicotyledonous animal-pollinated flower
2. Distinguish between pollination, fertilization and seed dispersal.
3. Draw and label a diagram showing the external and internal structure of a named dicotyledonous seed.
4. Explain the conditions needed for the germination of a typical seed.
5. Outline the metabolic processes during germination of a starchy seed.
6. Explain how flowering is controlled in long-day and short-day plants, including the role of phytochrome.