

**A Level Biology A**  
**H420/01 Biological Processes**

**Question Set 9**

9 (a) (i) Outline the importance of photosynthetic pigments in photosynthesis. [4]

**In the light harvesting complex, photosynthetic pigments absorb photons of light and funnel the energy down to a reaction centre. Two chlorophyll a molecules become oxidised and lose electrons. These e<sup>-</sup> are excited and passed down the ETC in a series of oxidation–reduction reactions for the eventual production of ATP by photophosphorylation.**

(ii) Chromista are photosynthetic protocists that live in water.

Chromista are different from other photosynthetic organisms because they contain the pigment chlorophyll c.

Chlorophyll c is not found in plants.

The wavelengths of light absorbed by chlorophyll c are different from those wavelengths absorbed by chlorophyll a and chlorophyll b.

Suggest why Chromista need pigments that are different from those of other photosynthetic organisms. [1]

**Chromista live in water so must have pigments adapted to absorb shorter wavelengths of light.**

9 (b) Fig. 17.1 is a diagram of the chloroplast found in a Chromista cell.

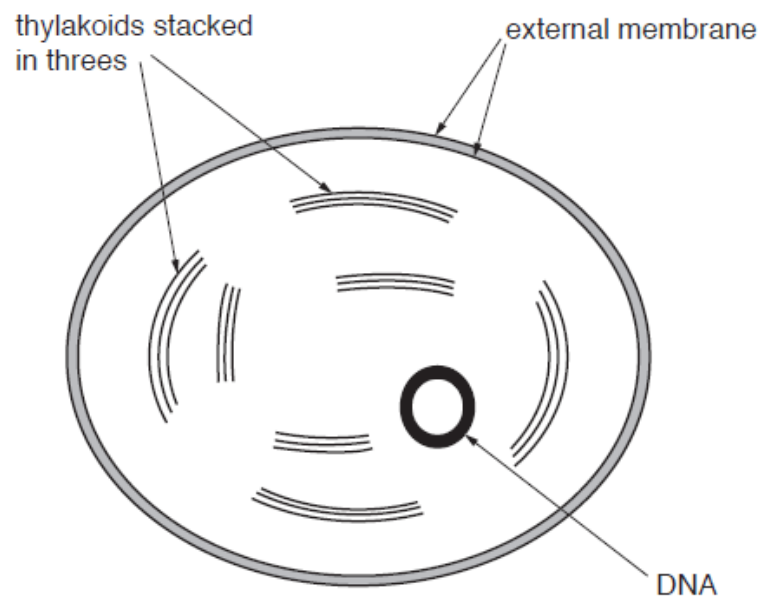


Fig. 17.1

Outline the structural differences between the Chromista chloroplast in Fig. 17.1 and the chloroplasts found in flowering plants. [3]

**Chromista thylakoids are stacked in groups of three whereas thylakoids in plants are stacked in groups of more than three. Chromista chloroplasts do not possess intergranal lamellae, unlike plant chloroplasts. Plant chloroplasts also possess starch grains whereas Chromista chloroplasts do not.**

- 9 (c) (i) Fig. 17.2 is a diagram of part of the plasma membrane of a Chromista cell.

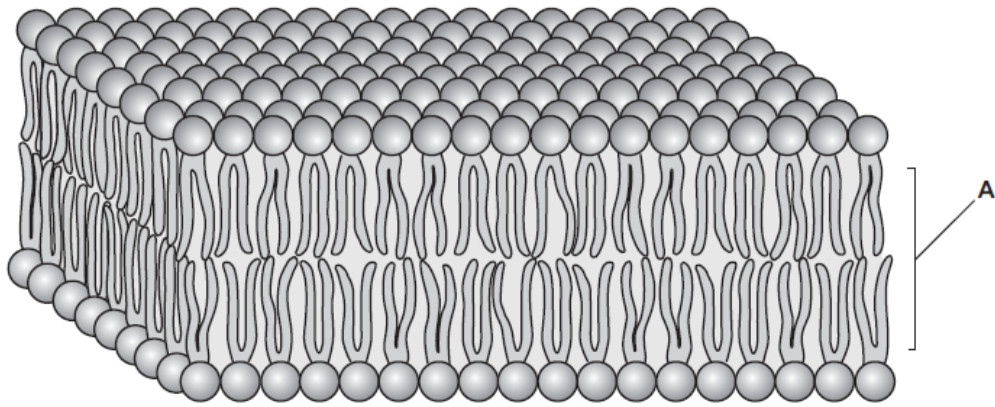


Fig. 17.2

State and explain how **one** property of region **A** in Fig. 17.2 contributes to the stability of the plasma membrane. [2]

**Region A contains cholesterol. Cholesterol is present in the phospholipid bilayer where it provides strength to and regulates the fluidity of the plasma membrane.**

- 9 (c) (ii) There are differences between the plasma membrane and membranes within cells.

Outline the role of membranes **within** cells. [2]

**Membranes are required within cells for compartmentalisation. They are also the site of important chemical reactions and processes e.g. oxidative phosphorylation in mitochondria, photophosphorylation in chloroplasts.**

**Total Marks for Question Set 9: 12**

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