Unit 6 · Algae

WORKSHEET

Full marks 35

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words [4]

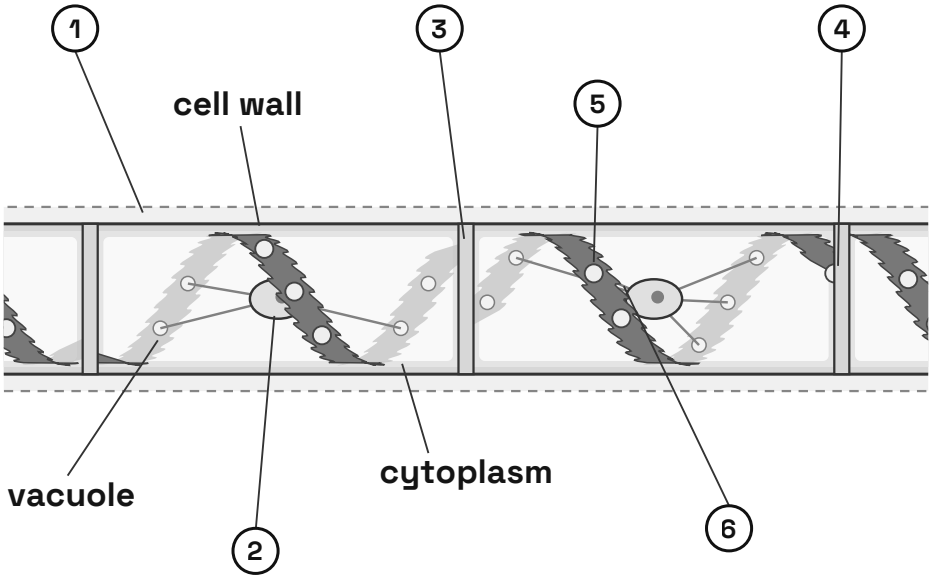
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

agar	**aplanospore**	**azygospore**	**fucoxanthin**	**laminarin**	**phycoerythrin**	**phycology**
pyrenoids	**scalariform**	**thallus**				

The study of algae is called _____. The body of an alga, not divided into roots, stems or leaves, is a _____. Red algae owe their color to _____, and the brown algae theirs to _____. In *Spirogyra*, small protein bodies along each chloroplast, each with a coat of starch, are the _____. Conjugation between two filaments, joined by tubes like a ladder, is called _____. A gamete of *Spirogyra* that fails to fuse and walls itself off forms an _____. The jelly from red algae used to grow bacteria in laboratories is _____.

2 Label the diagram [3]

The diagram shows part of a *Spirogyra* filament. Write the names of the parts 1 to 6. Each carries 0.5 mark.



1. _____ 2. _____

3. _____ 4. _____

5. _____ 6. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which pigment is mainly responsible for the red color of red algae? [1]

a. chlorophyll *a*
b. chlorophyll *b*
c. carotenoids
d. phycoerythrin

ii. Which pigments do green algae share with the land plants? [1]

a. chlorophyll *a* and chlorophyll *b*
b. chlorophyll *a* and phycoerythrin
c. chlorophyll *a*, chlorophyll *c* and fucoxanthin
d. only carotenoids

iii. A seaweed stores laminarin and mannitol, and its brown color comes from fucoxanthin. To which class does it belong? [1]

a. Chlorophyceae
b. Rhodophyceae
c. Phaeophyceae
d. Cyanophyceae

iv. In scalariform conjugation, why are all the cells of one filament left empty? [1]

a. because their gametes die
b. because their gametes have all moved through the tubes into the cells of the other filament
c. because they have become zygospores
d. because they have been used up as food

v. In the life cycle of *Spirogyra*, which is the only diploid stage? [1]

a. the filament
b. the gametes
c. the zygospore
d. the akinete

4 Very short answers [3]

Write very short answers to the following questions.

a. Who is called the father of phycology? [1]

b. Name the reserve food of the red algae and of the brown algae. [1]

c. Why do the steps of a pond or a temple tank become slippery in the monsoon? [1]

5 Short answers [9]

Write short answers to the following questions.

a. Why can red algae live deeper in the sea than green algae? **[2]**

b. Write any four differences between algae and fungi. **[2]**

c. A student finds, in a pond sample, long unbranched green threads in which every cell has a green ribbon wound in a spiral. Name the alga, and give one other feature of its cell she could look for to confirm it. **[2]**

d. Describe the three kinds of asexual spore of *Spirogyra*. **[3]**

6 Long answers [8]

Write long answers to the following questions.

a. Describe scalariform conjugation in *Spirogyra*, and the germination of the zygospore. **[4]**

b. Phewa Lake receives sewage and fertilizer from the land around it. Explain how this can lead to an algal bloom, what the bloom does to the lake's life, and two ways to prevent it. **[4]**

7 Think [3]

Algae are taught together, yet biologists say "algae" is not a natural group. Use the green, red and brown algae to explain this, and say which of them is closest to the land plants, with evidence.

8 Activity: Algae in a drop of pond water

(not marked)

Collect a little green scum and water squeezed from plants or stones at the edge of a pond. Put a small drop on a slide, cover it with a coverslip and look at low and then high power. Wear gloves or wash your hands well afterwards, and don't collect from a pond with a thick blue-green scum.

Alga (shape)	Its cells	Its chloroplasts	Name, if you know it

Which of your algae were threads, and which single cells?