Unit 9 · Gymnosperms

WORKSHEET

Full marks 32

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 32

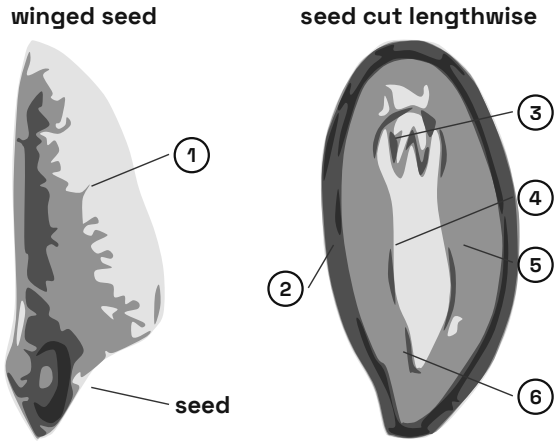
1 Key words [4]

Match each term in column A with its meaning in column B. Two meanings in column B are not needed. Each match carries 0.5 mark.

Column A		Column B
1. gymnosperm	☐	**a.** a short, branched root living with a fungus
2. dwarf shoot	☐	**b.** a scale of the female cone bearing two ovules
3. pollen chamber	☐	**c.** the outer wall of a pollen grain
4. microsporophyll	☐	**d.** a branch of limited growth, a few millimeters long, that bears the needles
5. ovuliferous scale	☐	**e.** the space at the top of the nucellus where the pollen lies
6. pollination drop	☐	**f.** a scale of the male cone bearing two pollen sacs
7. mycorrhizal root	☐	**g.** a seed plant whose seeds are not enclosed in an ovary
8. polyembryony	☐	**h.** a branch of unlimited growth with a bud at its tip
		i. one ovule starting several embryos
		j. sticky fluid from the micropyle that catches pollen

2 Label the diagram [3]

The diagram shows a winged seed of *Pinus* and the seed cut lengthwise. 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. How many needles are there in a spur of chir pine, *Pinus roxburghii*? [1]

a. two
b. three
c. five
d. it varies from spur to spur

ii. When a pollen grain of *Pinus* is shed, how many cells does it have? [1]

a. one
b. two
c. three
d. four

iii. In *Pinus*, which part of the seed is haploid? [1]

a. the embryo
b. the seed coat
c. the food store around the embryo
d. the wing

iv. Which feature do gymnosperms share with flowering plants but not with ferns? [1]

a. vascular tissue
b. a dominant sporophyte
c. seeds, and a pollen tube that carries the male gametes
d. double fertilization

v. A medicine made from a gymnosperm is used to open the airways in asthma. Which plant does it come from? [1]

a. *Taxus*
b. *Cycas*
c. *Ephedra*
d. *Araucaria*

4 Short answers [9]

Write short answers to the following questions.

a. Why are gymnosperms called "naked-seeded" plants? Why do they form no fruit? [2]

b. Pollination in *Pinus* is by wind. Give two features of the pine that suit wind pollination. [2]

c. Differentiate between the male cone and the female cone of *Pinus*, on any two points. [2]

d. A pine needle is long and narrow, with a thick cuticle and sunken stomata. Explain how these features help the pine keep its leaves through a cold, dry winter. **[3]**

5 Long answer **[8]**

Write a long answer to the following question.

a. Describe pollination and fertilization in *Pinus*, from the pollination drop to the zygote. **[4]**

b. Write any four uses of gymnosperms, naming the plant for each. **[4]**

6 Think **[3]**

A *Pinus* tree carries its male cones mostly on the lower branches and its female cones on the upper branches. How does this arrangement help the tree, and what does the pine pay for being wind-pollinated?

7 Activity: Count the needles

(not marked)

Collect fallen spurs (needle bundles) from under two kinds of pine, or from a pine and a deodar in a park. Look at the base of each spur with a hand lens, and cut a needle across.

Tree	Needles in each spur	Same number in every spur?	Shape of the cut needle
tree 1			
tree 2			

What is wrapped round the base of each spur?