

Question	Answer
Name the four classes of pteridophytes.	Psilopsida, Lycopsidea, Sphenopsida, and Pteropsida.
Give examples of Lycopsidea.	Selaginella and Lycopodium.
Give examples of Pteropsida.	Dryopteris, Pteris, and Adiantum.
Why are gymnosperms called naked-seeded plants?	Because their ovules and seeds are not enclosed by an ovary wall.
What type of plants are gymnosperms generally?	Medium-sized trees, tall trees, or shrubs.
Name one of the tallest gymnosperm trees.	Sequoia (giant redwood tree).
What type of root system is generally found in gymnosperms?	Tap root system.
What is mycorrhiza? Give an example from gymnosperms.	Fungal association with roots, seen in Pinus.
What are coralloid roots?	Specialised roots associated with nitrogen-fixing cyanobacteria in Cycas.
How are conifer leaves adapted to reduce water loss?	They are needle-like with thick cuticle and sunken stomata.
Are gymnosperms homosporous or heterosporous?	Gymnosperms are heterosporous.
Which two types of spores are produced by gymnosperms?	Haploid microspores and megaspores.
Where are microspores and megaspores produced in gymnosperms?	Within sporangia borne on sporophylls.
What are strobili or cones?	Structures formed by spirally arranged sporophylls on an axis.
What are microsporangiate strobili?	Male cones bearing microsporophylls and microsporangia.
What is a pollen grain in gymnosperms?	A highly reduced male gametophyte confined to a limited number of cells.
Where does pollen grain development occur?	Within the microsporangia.
What are macrosporangiate strobili?	Female cones bearing megasporophylls with ovules or megasporangia.
In which gymnosperm are male and female cones borne on the same tree?	Pinus.
In which gymnosperm are male cones and megasporophylls borne on different trees?	Cycas.
From where is the megaspore mother cell differentiated?	From one of the cells of the nucellus.

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What is nucellus?	Tissue protected by envelopes forming part of the ovule.
What is an ovule in gymnosperms?	The composite structure formed by nucellus and protective envelopes.
How many megaspores are formed after meiosis of the megaspore mother cell?	Four megaspores.
What develops from one megaspore in gymnosperms?	A multicellular female gametophyte.
What female sex organs are present in the female gametophyte of gymnosperms?	A multicellular female gametophyte bearing two or more archegonia.
Do gymnosperm gametophytes have an independent free-living existence?	No, they remain within the sporangia retained on the sporophytes.
How are pollen grains transferred in gymnosperms?	By air currents.
What is the function of the pollen tube in gymnosperms?	It carries male gametes towards the archegonia in the ovule.
What develops from the zygote in gymnosperms?	An embryo.
Why are gymnosperm seeds called naked seeds?	Because the seeds are not covered.
How are angiosperms different from gymnosperms regarding ovules?	In angiosperms, ovules are enclosed within flowers, unlike naked ovules in gymnosperms.
In which specialised structures are pollen grains and ovules developed in angiosperms?	Flowers.
Where are seeds enclosed in angiosperms?	Inside fruits.
What is the size range of angiosperms mentioned in the text?	From Wolffia (smallest) to Eucalyptus trees over 100 metres tall.
Mention some economic uses of angiosperms.	They provide food, fodder, fuel, medicines, and commercially important products.
Into which two classes are angiosperms divided?	Dicotyledons and monocotyledons.
Which groups are included in the plant kingdom?	Algae, bryophytes, pteridophytes, gymnosperms, and angiosperms.
How are algae described in the summary?	Chlorophyll-bearing, simple, thalloid, autotrophic, and largely aquatic organisms.
On what basis are algae classified into three classes?	Type of pigment possessed and type of stored food.
Name the three classes of algae.	Chlorophyceae, Phaeophyceae, and Rhodophyceae.
How do algae reproduce vegetatively?	By fragmentation.

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What are the three types of sexual reproduction in algae?	Isogamy, anisogamy, and oogamy.
Why are bryophytes dependent on water?	For sexual reproduction.
By which structures are bryophytes attached to the substratum?	Rhizoids.
Into which two groups are bryophytes divided?	Liverworts and mosses.
What is the main plant body of a bryophyte called?	Gametophyte.
What are the male and female sex organs in bryophytes?	Antheridia and archegonia.
What is produced after fertilisation in bryophytes?	A sporophyte.
Which phase is dominant in pteridophytes?	Sporophyte phase.
Which vascular tissues are present in pteridophytes?	Well-differentiated vascular tissues.
What do spores of pteridophytes germinate into?	Gametophytes.
Why is water required in pteridophytes?	For transfer of male gametes to archegonium.
Why are gymnosperms called naked-seeded plants?	Because their ovules are not enclosed by any ovary wall and seeds remain exposed after fertilisation.
Which spores are produced in gymnosperms?	Microspores and megaspores.
What are microsporophylls and megasporophylls?	Sporophylls arranged spirally on the axis to form male and female cones respectively.
What happens after fertilisation in gymnosperms?	The zygote develops into an embryo and ovules into seeds.
Into which two classes are angiosperms divided?	Dicotyledons and monocotyledons.
Match: Chlamydomonas belongs to which group?	Algae.
Match: Cycas belongs to which group?	Gymnosperm.