

EXPERIMENT 8: PLANT DIVERSITY – GYMNOSPERMS AND ANGIOSPERMS**Course Learning Outcome:**

Solve basic problems related to transport system processes, mechanisms for adaptations in living things, ecological and environmental issues in biology.

(C3, PLO 2, CTPS 3, MQF LOC ii)

Learning Outcomes:

At the end of this lesson, students should be able to:

- Describe the unique characteristics of gymnosperms.
- Identify morphological reproductive structure of gymnosperms and angiosperms.

Student Learning Time:

Face-to-face	Non face-to-face
1 hour	1 hour

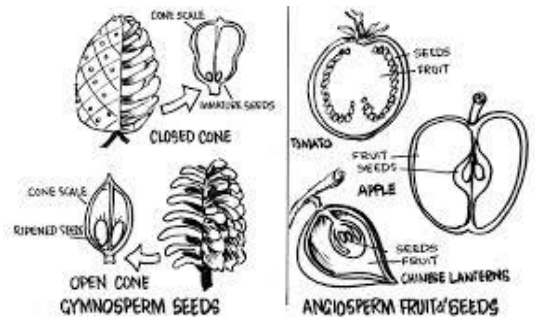
Direction: Read over the lab manual and then answer the following questions.

**Check this out:**

A plant kingdom is further classified into subgroups.

Classification is based on the following criteria:

- Plant body:** Presence or absence of a well-differentiated plant body. e.g. root, stem and leaves.
- Vascular system:** Presence or absence of a vascular system for the transportation of water and other substances. e.g. phloem and xylem.
- Seed formation:** Presence or absence of flowers and seeds and if the seeds are naked or enclosed in a fruit.



Click the url below to find out more about gymnosperm and angiosperm.

<https://www2.tulane.edu/~bfleury/diversity/labguide/gymangio.html>

Introduction

- List FOUR main phylum in Gymnosperms.

- In the gymnosperm alternation of generation, which generation is dominant?

- Briefly explain TWO characteristics to differentiate between gymnosperm and angiosperm.

Type of seed : _____

Vascular system : _____

Experiment

1. **FIGURE 1** below shows male and female cone of *Cycas* sp. label the male and female parts of *Cycas* sp.

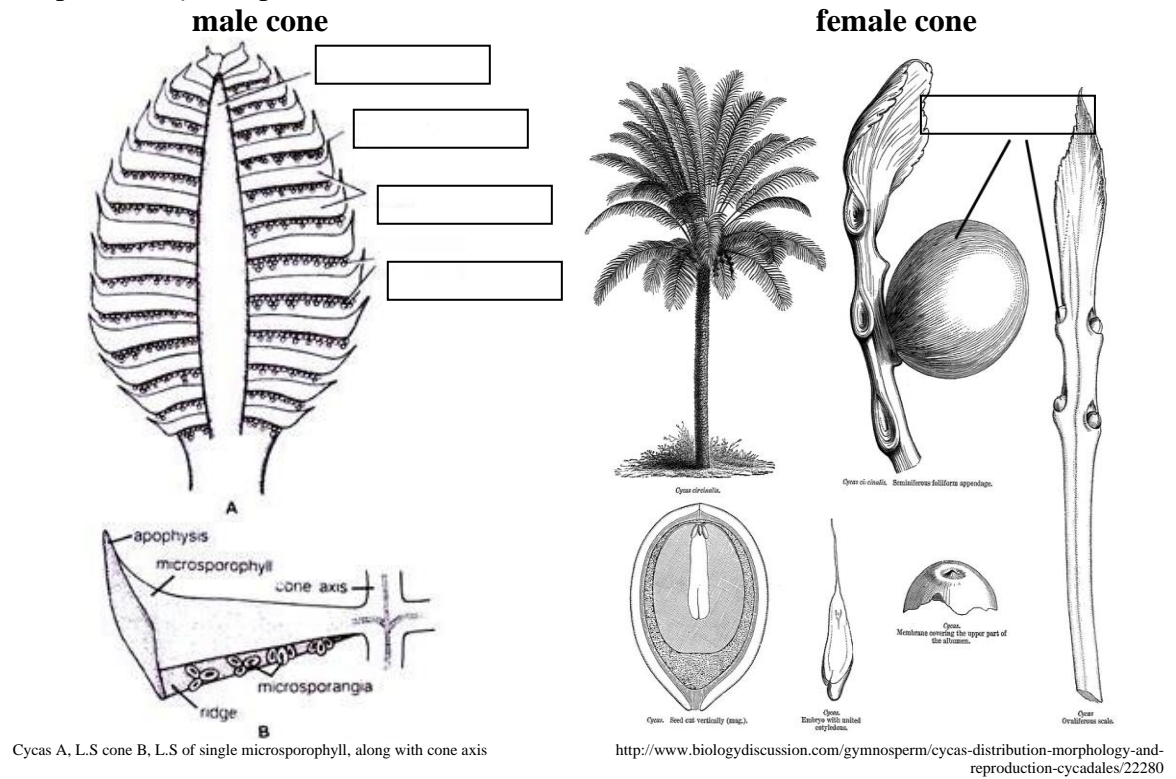


FIGURE 1

2. Based on **FIGURE 2**, identify the male and female cone of *Gnetum* sp.

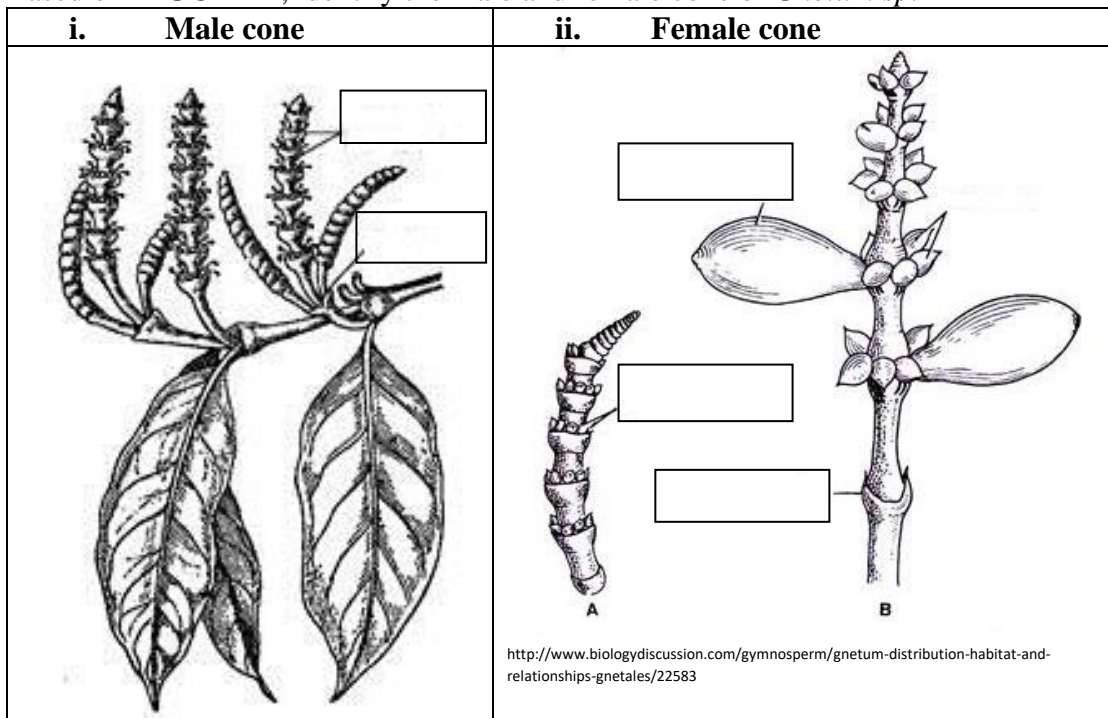


FIGURE 2

3. **FIGURE 3** below shows a male cone structure of *Pinus* sp.
a. Label the parts of the male cone.

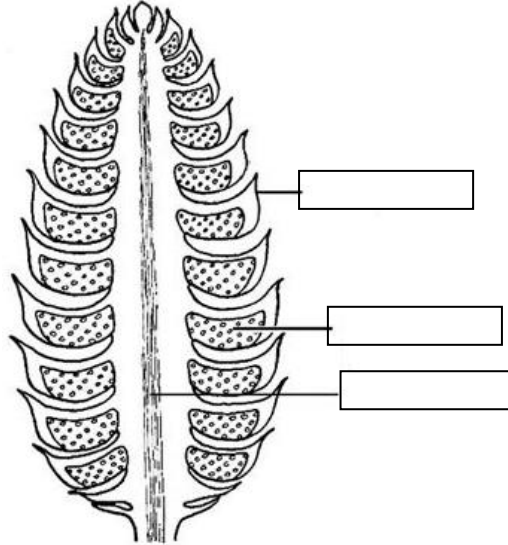


FIGURE 3

<http://broadwaycomputers.us/seed-cone-diagram.html>

- b. State the phylum for *Pinus* sp. and give ONE its morphological characteristic.

4. Phylum in gymnosperm as shown in **FIGURE 1-3** are heterosporous. Briefly explain.

5. Draw and label the flower structure of *Hibiscus rosa-sinensis*

6. Name the reproductive structure of gymnosperms and angiosperms.

Gymnosperms : _____

Angiosperm : _____