UNIVERSITY OF CALICUT
DEPARTMENT OF BOTANY
Entrance Examination for Admission to Ph. D. in Botany Jan 2019

MODEL SAMPLE QUESTIONS

Time: 2 Hours **Max Marks 100**

Attempt questions carefully. Put a √ mark for the correct answer. Do not mark more than one answer.
All questions carry **1** mark each. **1 mark will be deducted for each wrong answer.**

1. Match the following pteridophyte members with their families.

1. Forked ferns	A. Aspleniaceae
2. Umbrella ferns	B. Dipteridaceae
3. Spleenworts	C. Gleicheniaceae
4. Grape ferns	D. Ophioglossaceae

a) 1-D, 2-C, 3-B, 4-A ☐ c) 1-C, 2-B, 3-A, 4-D ☐
b) 1-A, 2-C, 3-D, 4-B ☐ d) 1-B, 2-A, 3-C, 4-D ☐

2. A fungus that exhibits alternation of generation is ----------
a) *Puccinia* ☐ c) *Allomyces* ☐
b) *Neocallimastix* ☐ d) *Agaricus* ☐

3. If the chromosome number in the leaf of *Funaria* is 20, what will be the chromosome number in the spores:
a) 20 ☐ c) 5 ☐
b) 40 ☐ d) 10 ☐

4. A girl who pricked her finger while pruning some rose bushes develops a local pustule that progresses to an ulcer. Several nodules then develop along the local lymphatic drainage. The most likely agent is
a) *Aspergillus fumigatus* ☐ c) *Cryptococcus neoformans* ☐
b) *Sporothrix schenckii* ☐ d) *Candida albicans* ☐

5. Vascular bundles in which one type of vascular tissue completely encircles or encloses the other is
a) Concentric vascular bundles ☐ c) Conjoint vascular bundles ☐
b) Radial vascular bundles ☐ d) None of these ☐

6. Cystolith is an example of
a) Calcium oxalate crystals ☐ c) Calcium carbonate crystals ☐
b) Calcium acetate crystals ☐ d) Calcium phosphate crystals ☐

7. A given haploid *S. cerevisiae* (baker's yeast) strain has a temperature-sensitive mutation that inactivates its hexokinase enzyme at the high (restrictive) temperature. (Hexokinase catalyzes the first reaction in the glycolysis pathway). A culture of this mutant is grown on glucose/minimal salts medium (glucose is the only energy source under these conditions) and then shifted to the restrictive temperature for a couple of hours. Which of the alternatives below describes the cell cycle stage of most of the cells in the culture?
a) G1 phase ☐ c) M phase ☐
b) G2 phase ☐ d) A mix of cells in G1, S, G2 & M ☐