

- (g) Explain how fungi contribute to agriculture as biofertilizers and biocontrol agents.
- (h) Describe the process of mushroom cultivation from substrate preparation to harvesting.

4. Answer **any one** of the following :

10×1=10

- (a) Explain the classification of Eumycota as per Ainsworth (1973). Name the classes under this group and their distinguishing features. 4+6=10
- (b) Define mycorrhiza. Describe its major types and explain their significance in agriculture and forests. 2+5+3=10
- (c) Give a detailed account of the life cycle of *Agaricus*. How does basidiospore formation occur, and what is its ecological significance ? 5+3+2=10
- (d) Write down the causal organism, characteristics symptoms, and disease cycle of White Rust disease in cruciferous crops. 2+3+5=10

Total number of printed pages-4

1 (Sem-4) BOT 1

2025

BOTANY

Paper : BOT0400104

(Mycology and Phytopathology)

Full Marks : 45

Time : Two hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct option for each question :

1×5=5

- (a) Which division of fungi includes slime molds ?
- (i) Eumycota
- (ii) Myxomycota
- (iii) Zygomycota
- (iv) Ascomycota

(b) The sac-like structure in Ascomycetes where spores are formed is called

- (i) Basidium
- (ii) Conidiophore
- (iii) Ascus
- (iv) Sporangium

(c) *Alternaria* causes which plant disease ?

- (i) Late blight of potato
- (ii) Early blight of potato
- (iii) Black rust of wheat
- (iv) White rust

(d) Which fungus is used in the production of citric acid ?

- (i) *Saccharomyces cerevisiae*
- (ii) *Aspergillus niger*
- (iii) *Rhizopus stolonifer*
- (iv) *Penicillium chrysogenum*

(e) Ergot alkaloids, used to treat migraines, are derived from

- (i) *Aspergillus flavus*
- (ii) *Penicillium notatum*
- (iii) *Claviceps purpurea*
- (iv) *Saccharomyces cerevisiae*

2. Write short answer of the following : $2 \times 5 = 10$

- (a) Define heterothallism in fungi.
- (b) What is plant quarantine ?
- (c) Define Integrated Disease Management (IDM).
- (d) What is spawn ?
- (e) How do fungi contribute to antibiotic production ? Give one example.

3. Answer **any four** of the following :

$5 \times 4 = 20$

- (a) What are the major components of a fungal cell wall ? Briefly describe their functions.
- (b) What are haustoria ? Explain their role in fungal parasitism.
- (c) Compare asexual reproduction in Mastigomycotina and Zygomycotina.
- (d) Describe the life cycle of *Mucor* with a labeled diagram.
- (e) What is heterokaryosis ? How does parasexuality contribute to genetic variation in Deuteromycotina ?
- (f) How would you differentiate powdery mildew infection from downy mildew in the field based on symptom appearance ?