

## **Content of matter**

### **MYCOLOGY:**

#### **I. General Characteristics of Fungi (Molds and Yeasts)**

- Chemical Composition and Cell Structure
- Growth and Reproduction
- Laboratory and Large-Scale Cultivation

#### **II. Classification of fungi**

- Yeasts
- Chitridomycetes
- Oomycetes
- Zygomycetes
- Ascomycetes
- Imperfect fungi
- Basidiomycetes
- Ectotrophic and endotrophic mycorrhizae

#### **III. The Importance of Using Fungi in: Food, Agriculture, and Public Health**

##### **A. Food Industry**

###### **1. Uses of Molds:**

- The main phases of mold growth
- Examples of cultures on solid and liquid media
- Development and differentiation
- Production of metabolites (primary and secondary)
- Use in dairy production
- Edible mushrooms

###### **2. Uses of Yeasts:**

- Beer production
- Bread fermentation

##### **B. Pharmaceutical Industry**

Fungi producing metabolites: vitamins, antibiotics, and enzymes

- Origin
- Isolation
- Extraction and purification
- Therapeutic applications and uses

#### IV. Pathological Aspects

##### A. In Humans and Animals:

- Candidiasis
- Dermatophytes

##### B. In Plants:

- Storage Fungi
- Mycotoxins

### **ALGOLOGY:**

1. General Characteristics of Algae
2. Structure and Morphology of Algae
3. Algal Reproduction Cycle (Sexual and Asexual)
4. Taxonomy of Algae:
  - 4.1. Chlorophyta
  - 4.2. Phaeophyta
  - 4.3. Rhodophyta
  - 4.4. Bacillariophyta (Diatoms)
  - 4.5. Dinoflagellata
  - 4.6. Oomycota
5. Importance of Algae (Deleterious and Beneficial Effects of Algae)
  - Food (food, agar-agar, POU, additives, etc.)
  - Pharmaceutical industry (capsules, carrageenans, etc.)
  - Industry (cosmetics, textiles, gels, etc.)

### **VIROLOGY**

1. Introduction to virology
2. Viruses and virions

3. General properties
4. Structure of viruses and bacteriophages
5. Viral systematics
6. Viral genomes
7. Viral replication: general characteristics of viral replication Multiplication of single-stranded RNA viruses of positive and negative polarity, double-stranded RNA viruses, single-stranded DNA viruses, and double-stranded DNA viruses; multiplication of RNA viruses via DNA intermediates and of DNA viruses via RNA intermediates.
8. Animal viruses and plant viruses: comparison of the two types of viruses.
9. Latent infections, cytocidal agents.
10. Viral restriction.