Name: Enrolment No:	

UPES

End Semester Examination, December 2024

Course: Eukaryotic Microbiology — **Semester : III**

Program: B.Sc. Microbiology — **Duration : 3 Hours**

Course Code: HSMB2031 — **Max. Marks: 100**

Instructions: Read all questions carefully.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Main component of fungal cell walls is: a) Cellulose b) Chitin c) Pectin d) Glycogen	**1.5**	**CO1**
Q 2	Plasmodium causes which disease? a) Sleeping sickness b) Malaria c) Dysentery d) Leprosy	**1.5**	**CO1**
Q 3	The ecological role of algae as primary producers is important for: a) Nutrient cycling b) Water purification c) Oxygen production d) All of the above	**1.5**	**CO2**
Q 4	Leishmania is transmitted by: a) Mosquitoes b) Ticks c) Sandflies d) Water	**1.5**	**CO1**
Q 5	Select the algae which are commonly used as biofuels: a) Green algae b) Brown algae c) Diatoms d) Red algae	**1.5**	**CO2**

Q 6	Decline in symbiotic fungi affect forest ecosystems as: a) Nutrient absorption by plants would decrease, affecting plant growth. b) More nutrients would be available to other microorganisms. c) Plant growth would be enhanced as fungi compete less for nutrients. d) The rate of organic matter decomposition would dramatically increase.	**1.5**	**CO2**
Q 7	A protozoan species undergoes an encystment process for: a) Reproduce more rapidly. b) Survive hostile environmental conditions. c) Increase its metabolic rate. d) Improve its photosynthetic efficiency.	**1.5**	**CO2**
Q 8	Keratinophilic fungi primarily grow on: a) Plants b) Rocks c) Hair and nails d) Water bodies	**1.5**	**CO1**
Q 9	Select the stage which is critical for infecting red blood cells in humans: a) Gametocyte b) Sporozoite c) Merozoite d) Oocyst	**1.5**	**CO3**
Q 10	Algae play a significant role as primary producers in many ecosystems. This role is crucial because: a) They provide a primary source of carbon dioxide. b) They serve as a foundation for food webs by producing organic matter. c) They are the only organisms capable of photosynthesis. d) They increase water temperature in aquatic environments	**1.5**	**CO2**
Q 11	The cell walls of fungi are primarily composed of chitin: True/False	**1.5**	**CO1**
Q 12	Protozoa can reproduce both sexually and asexually: Tru/False	**1.5**	**CO2**
Q 13	Dinoflagellates have two flagella, which aid in their movement and feeding: True/False	**1.5**	**CO2**
Q 14	Algae can be used in wastewater treatment to remove heavy metals: True/False	**1.5**	**CO2**
Q 15	The primary pigment in brown algae is chlorophyll a: True/False	**1.5**	**CO1**

Q 16	Most fungi are photosynthetic and produce their own food: True/False	**1.5**	**CO2**
Q 17	Algae contribute significantly to global oxygen production: True/False	**1.5**	**CO1**
Q 18	Lichens are a type of symbiotic relationship between algae and fungi: True/False	**1.5**	**CO2**
Q 19	Parasitism is a relationship in which the protozoa benefit at the expense of the host: True/False	**1.5**	**CO1**
Q 20	The protozoan Trichomonas vaginalis infects the human urogenital tract: True/False	**1.5**	**CO1**
	Section B **(4Qx5M=20 Marks)**		
Q 21	Describe the structure of a typical fungal cell and its primary components.	**5**	**CO2**
Q 22	Explain the types of media and culture methods that are used for cultivating algae in the laboratory.	**5**	**CO3**
Q 23	Describe the mutualistic relationships, such as mycorrhizal symbiosis, benefit both fungi and plants, and what advantages do they offer in nutrient-poor soils?	**5**	**CO2**
Q 24	Discuss the *Entamoeba* infection in humans, and what are the clinical representations of the disease?	**5**	**CO2**
	Section C **(2Qx15M=30 Marks)**		
Q 25	A woman presents with vaginal itching, discharge, and discomfort during urination. Lab results confirm *Trichomonas vaginalis* infection. a) Describe the structure and life cycle of *Trichomonas vaginalis* and explain why it does not require an intermediate host. b) Explain how *Trichomonas* is transmitted and its significance in human health. c) Describe the prevention methods to reduce the risk of transmission.	**15**	**CO3**
Q 26	Environmental scientists are investigating an algal bloom in a freshwater lake and studying its impact on local biodiversity. a) Explain the concept of algal ecology and how algae interact with their environment.	**15**	**CO4**

	b) Discuss factors that lead to algal blooms in freshwater ecosystems. c) Describe the ecological impacts of algal blooms on aquatic ecosystems and local biodiversity?		
Section D (2Qx10M=20 Marks)			
Q 27	Explain the economic importance of fungi in fields such as biotechnology, agriculture, and medicine. Also discuss the ecological significance of their roles in nutrient cycling.	**10**	**CO3**
Q 28	Explain the life cycles of *Leishmania* with clinical representation, diagnosis and treatment.	**10**	**CO2**