

Roll No.

Question Booklet Number

O. M. R. Serial No.

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M. Sc. (Microbiology) (Second Semester)
EXAMINATION, 2025-26
(Old Syllabus Effective from 2022)
(Only Back Paper Students)
MYCOLOGY AND PHYCOLOGY

Paper Code							
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Questions Booklet
Series

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Time : 1:30 Hours]

[Maximum Marks : 75

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(Remaining instructions on the last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

1. The ecological significance of algae includes :
 - (A) Acting as decomposers only
 - (B) Forming the base of aquatic food chains
 - (C) Causing only diseases
 - (D) Reducing oxygen production
2. Algae in extreme habitats are termed :
 - (A) Mesophiles
 - (B) Thermophiles only
 - (C) Extremophiles
 - (D) Halophiles only
3. Excessive algal growth in water bodies leads to :
 - (A) Eutrophication
 - (B) Soil fertility
 - (C) Reduced biomass
 - (D) Increased oxygen
4. Lipid-rich microalgae are mainly used for :
 - (A) Antibiotics
 - (B) Protein synthesis
 - (C) Nitrogen fixation
 - (D) Biofuel production
5. Photobioreactors are designed to :
 - (A) Kill algae
 - (B) Control algal growth conditions
 - (C) Reduce light exposure
 - (D) Stop photosynthesis
6. Algae used in wastewater treatment help in :
 - (A) Removing nutrients and contaminants
 - (B) Increasing pollutants
 - (C) Producing toxins
 - (D) Reducing oxygen
7. Hydrogen production in algae is linked to :
 - (A) Respiration
 - (B) Photosynthetic electron transport
 - (C) Glycolysis
 - (D) Fermentation
8. Phycocolloids are :
 - (A) Photosynthetic pigments
 - (B) Gel-forming substances from algae
 - (C) Storage compounds
 - (D) Enzymes

9. Carrageenan, a commercially important phycocolloid, is primarily obtained from which group of algae ?
- (A) Green algae (*Chlorella, Ulva*)
 (B) Brown algae (*Laminaria, Sargassum*)
 (C) Red algae (*Chondrus crispus, Kappaphycus alvarezii*)
 (D) Diatoms (*Navicula, Pinnularia*)
10. Alginate is derived from :
- (A) Green algae
 (B) Brown algae
 (C) Red algae
 (D) Cyanobacteria
11. Agar, an important phycocolloid used in microbiological media, is primarily obtained which group of algae ?
- (A) Green algae (*Chlorella, Ulva*)
 (B) Brown algae (*Laminaria, Sargassum*)
 (C) Red algae (*Gelidium, Gracilaria*)
 (D) Cyanobacteria (*Anabaena, Nostoc*)
12. *Porphyra* is mainly used as :
- (A) Biofuel
 (B) Fertilizer only
 (C) Antibiotic
 (D) Edible seaweed
13. *Dunaliella* is known for producing :
- (A) Agar
 (B) Alginate
 (C) Carrageenan
 (D) Beta-carotene
14. *Spirulina* is commercially important due to its :
- (A) High lipid content
 (B) High protein content
 (C) High cellulose content
 (D) Toxic compounds
15. Cyanobacteria used in rice fields help in :
- (A) Nitrogen fixation
 (B) Carbon fixation
 (C) Oxygen depletion
 (D) Soil erosion
16. Algae used as biofertilizers mainly contribute by :
- (A) Producing toxins
 (B) Fixing atmospheric nitrogen
 (C) Increasing salinity
 (D) Reducing nutrients
17. Phycoviruses infect :
- (A) Bacteria
 (B) Fungi
 (C) Algae
 (D) Protozoa

18. Harmful Algal Blooms (HABs) can lead to :
- (A) Increased oxygen levels
 - (B) Reduced toxin production
 - (C) Increased biodiversity
 - (D) Oxygen depletion in water bodies
19. Algal blooms are primarily caused by :
- (A) Low nutrient levels
 - (B) Low light intensity
 - (C) Eutrophication
 - (D) High salinity
20. Algae play a fundamental role in aquatic ecosystems as :
- (A) Decomposers
 - (B) Primary producers
 - (C) Parasites
 - (D) Consumers
21. Flagella in algae help in :
- (A) Movement
 - (B) Nutrition
 - (C) Respiration
 - (D) Storage
22. Eye spots in algae are involved in :
- (A) Respiration
 - (B) Storage
 - (C) Reproduction
 - (D) Phototaxis
23. Chlorophyta store food as :
- (A) Glycogen
 - (B) Mannitol
 - (C) Laminarin
 - (D) Starch
24. The absence of flagella is characteristic of :
- (A) Green algae
 - (B) Brown algae
 - (C) Red algae
 - (D) Cyanobacteria
25. In Rhodophyta, meiosis occurs :
- (A) Before fertilization
 - (B) During vegetative phase
 - (C) After fertilization
 - (D) Never occurs
26. Alternation of generations is prominent in :
- (A) Chlorophyta
 - (B) Phaeophyta
 - (C) Rhodophyta
 - (D) Cyanobacteria

27. Oogamy involves :
- (A) Equal gametes
 - (B) Large non-motile egg and small motile sperm
 - (C) No gametes
 - (D) Only spores
28. Isogamy refers to :
- (A) Fusion of identical gametes
 - (B) Fusion of dissimilar gametes
 - (C) Asexual reproduction
 - (D) Vegetative growth
29. Sexual reproduction in algae involves :
- (A) Fragmentation
 - (B) Fusion of gametes
 - (C) Binary fission
 - (D) Budding
30. Asexual reproduction in algae commonly involves :
- (A) Gametes
 - (B) Embryos
 - (C) Seeds
 - (D) Zoospores
31. Vegetative reproduction in algae occurs by :
- (A) Fragmentation
 - (B) Meiosis
 - (C) Gamete fusion
 - (D) Sporulation only
32. Thallus organization in algae ranges from :
- (A) Unicellular to complex multicellular
 - (B) Only unicellular
 - (C) Only multicellular
 - (D) Colonial only
33. Chromatic adaptation refers to :
- (A) Structural changes
 - (B) Pigment adjustment to light
 - (C) Increase in cell size
 - (D) Reduction in metabolism
34. Akinetes are :
- (A) Reproductive cells
 - (B) Resting spores
 - (C) Flagellated cells
 - (D) Photosynthetic cells

35. Heterocysts in cyanobacteria are specialized for :
- (A) Photosynthesis
 - (B) Storage
 - (C) Respiration
 - (D) Nitrogen fixation
36. The reserve food material in brown algae is :
- (A) Starch
 - (B) Glycogen
 - (C) Laminarin
 - (D) Cellulose
37. Red algae are characterized by :
- (A) Chlorophyll b
 - (B) Phycoerythrin
 - (C) Fucoxanthin
 - (D) Carotene
38. Brown algae contain which characteristic pigment ?
- (A) Chlorophyll b
 - (B) Xanthophyll
 - (C) Phycoerythrin
 - (D) Fucoxanthin
39. The main photosynthetic pigment in green algae is :
- (A) Chlorophyll a and b
 - (B) Chlorophyll c
 - (C) Phycoerythrin
 - (D) Fucoxanthin
40. The primary basis for algal classification includes :
- (A) Pigments, flagella, and food reserves
 - (B) Habitat only
 - (C) Size of cells
 - (D) Mode of respiration
41. Fungal virulence is primarily associated with :
- (A) Photosynthesis
 - (B) Enzyme production and invasion
 - (C) Oxygen production
 - (D) Nitrogen fixation
42. Mycoses caused by dermatophytes are classified as :
- (A) Systemic
 - (B) Subcutaneous
 - (C) Cutaneous
 - (D) Opportunistic

43. Which factor increases susceptibility to fungal infections ?
- (A) High immunity
 - (B) Balanced diet
 - (C) Antibiotic overuse
 - (D) Low temperature
44. Dimorphic fungi exist in :
- (A) Single form
 - (B) Two forms depending on conditions
 - (C) Only yeast form
 - (D) Only filamentous form
45. Subcutaneous infections are typically acquired via :
- (A) Inhalation
 - (B) Vector transmission
 - (C) Ingestion
 - (D) Skin trauma
46. Candidiasis commonly affects :
- (A) Bones
 - (B) Blood vessels
 - (C) Brain only
 - (D) Mucous membranes
47. Which structure helps fungi invade host tissues ?
- (A) Hyphae
 - (B) Flagella
 - (C) Cilia
 - (D) Pili
48. Fungal infections transmitted through inhalation are :
- (A) Cutaneous
 - (B) Subcutaneous
 - (C) Systemic
 - (D) Superficial
49. Opportunistic fungi exhibit pathogenicity when :
- (A) Nutrients are high
 - (B) Host immunity is weakened
 - (C) Temperature is low
 - (D) Oxygen is high
50. Dermatophytosis is commonly known as :
- (A) Ringworm
 - (B) Tuberculosis
 - (C) Malaria
 - (D) Cholera

51. Fungi associated with insects often play a crucial role in host nutrition. What is their primary contribution ?
- (A) Photosynthesis
 - (B) Digestion of complex substrates
 - (C) Nitrogen fixation
 - (D) Oxygen production
52. Which fungal infection is associated with AIDS patients ?
- (A) Dermatophytosis
 - (B) Myxomycetes
 - (C) Candidiasis
 - (D) Lichen formation
53. Fungal infections of nails are termed :
- (A) Onychomycosis
 - (B) Dermatitis
 - (C) Mycosis fungoides
 - (D) Keratitis
54. Blastomycosis is caused by :
- (A) Dimorphic fungi
 - (B) Yeasts
 - (C) Bacteria
 - (D) Viruses
55. Pneumocystis infection primarily affects :
- (A) Skin
 - (B) Lungs
 - (C) Liver
 - (D) Kidneys
56. Subcutaneous mycoses typically affect :
- (A) Brain
 - (B) Lungs
 - (C) Subcutaneous tissues
 - (D) Blood
57. Systemic mycoses are characterized by infection of :
- (A) Skin surface
 - (B) Internal organs
 - (C) Hair only
 - (D) Nails only

58. Candidiasis is an opportunistic fungal infection commonly affecting mucosal surfaces. Which organism is responsible ?
- (A) *Aspergillus*
 - (B) *Penicillium*
 - (C) *Rhizopus*
 - (D) *Candida*
59. Dermatophytes mainly infect :
- (A) Blood
 - (B) Internal organs
 - (C) Keratinized tissues
 - (D) Muscles
60. Opportunistic fungal infections primarily occur in :
- (A) Healthy individuals
 - (B) Immunocompromised hosts
 - (C) Plants only
 - (D) Soil microbes
61. Prevention of fungal growth can be achieved by :
- (A) Increasing moisture
 - (B) Increasing nutrients
 - (C) Reducing water activity
 - (D) Lowering oxygen
62. The effect of environment on fungal growth is mainly through :
- (A) Genetic mutation only
 - (B) Temperature, pH, and moisture
 - (C) Light only
 - (D) Pressure only
63. Lichens play a significant ecological role in ecosystem development and monitoring. Which of the following best describes their contribution ?
- (A) Lichens act as pioneer species, facilitating rock weathering and contributing to soil formation.
 - (B) Lichens primarily cause contamination of aquatic ecosystems leading to pollution.
 - (C) Lichens serve as major agents for spreading infectious diseases in humans animals.
 - (D) Lichens deplete atmospheric oxygen through non-photosynthetic metabolism.

64. Fungal associations with animals are ecologically and physiologically diverse. Which the following best describes these interactions ?
- (A) Fungi engage in symbiotic relationships as well as parasitic interactions causing diseases in animals.
 - (B) Fungi perform photosynthesis within animal tissues to provide energy.
 - (C) Fungi fix atmospheric nitrogen inside animal hosts to enhance nutrition.
 - (D) Fungi contribute to carbon fixation in animal metabolic pathways.
65. Substrate succession refers to :
- (A) Spore germination
 - (B) Dormancy
 - (C) Sexual reproduction
 - (D) Sequential colonization of substrates
66. Parasitic fungi differ from saprophytes by :
- (A) Using dead matter
 - (B) Producing spores
 - (C) Performing photosynthesis
 - (D) Extracting nutrients from living hosts
67. Saprophytic fungi obtain nutrients from :
- (A) Living hosts
 - (B) Dead organic matter
 - (C) Inorganic salts
 - (D) Atmospheric gases
68. Arbuscules in VAM function in :
- (A) Storage
 - (B) Nutrient exchange
 - (C) Reproduction
 - (D) Protection

69. Vesicular Arbuscular Mycorrhiza (VAM) is important for :
- (A) Nitrogen fixation
 - (B) Sulfur metabolism
 - (C) Carbon fixation
 - (D) Phosphorus uptake
70. Endomycorrhiza involves :
- (A) Intracellular penetration of hyphae
 - (B) Surface colonization
 - (C) No nutrient exchange
 - (D) Only fungal growth
71. Ectomycorrhiza is characterized by :
- (A) Penetration into root cells
 - (B) Formation of mantle around roots
 - (C) Absence of hyphae
 - (D) Parasitism
72. Deuterolichens are classified based on :
- (A) Sexual reproduction
 - (B) Unknown fungal partner
 - (C) Asexual fungal stage
 - (D) Algal diversity
73. Basidiolichens differ from ascolichens by :
- (A) Type of algal partner
 - (B) Mode of nutrition
 - (C) Habitat
 - (D) Type of fungal partner
74. The algal component of lichen is termed :
- (A) Mycobiont
 - (B) Phycobiont
 - (C) Sporobiont
 - (D) Hyphobiont
75. The fungal partner in lichen is called :
- (A) Phycobiont
 - (B) Mycobiont
 - (C) Symbiont
 - (D) Thallobiont

76. Lichens are composed of :
- (A) Fungus and alga/cyanobacterium
 - (B) Fungus and protozoa
 - (C) Alga and virus
 - (D) Fungus and bacteriophage
77. Physiological specialization in fungi refers to :
- (A) Variation in spore size
 - (B) Host-specific pathogenicity
 - (C) Colony morphology
 - (D) Growth temperature
78. Fungal sex hormones primarily regulate :
- (A) Respiration
 - (B) Vegetative growth
 - (C) Sexual reproduction
 - (D) Nutrient uptake
79. Homothallic fungi are characterized by :
- (A) Requirement of two mating types
 - (B) Absence of sexual reproduction
 - (C) Self-fertility
 - (D) Only asexual spores
80. Heterothallism in fungi promotes :
- (A) Asexual reproduction
 - (B) Spore dormancy
 - (C) Rapid colony growth
 - (D) Genetic diversity through outcrossing
81. Fungal hyphal growth primarily occurs by :
- (A) Intercalary expansion
 - (B) Apical extension
 - (C) Binary fission
 - (D) Budding
82. Karyogamy refers to :
- (A) Cytoplasmic fusion
 - (B) Spore germination
 - (C) Nuclear fusion
 - (D) Hyphal branching
83. Blastomycetes are classified under :
- (A) Deuteromycotina
 - (B) Ascomycotina
 - (C) Basidiomycotina
 - (D) Zygomycotina

84. Entomophthorales are known for :
- (A) Plant symbiosis
 - (B) Insect parasitism
 - (C) Human infections
 - (D) Algal associations
85. Dikaryotic phase is prominent in :
- (A) Zygomycetes
 - (B) Myxomycetes
 - (C) Oomycetes
 - (D) Basidiomycetes
86. Budding is a common reproductive method in :
- (A) Yeasts
 - (B) Rhizopus
 - (C) Aspergillus
 - (D) Penicillium
87. Asexual reproduction in fungi commonly involves :
- (A) Meiosis
 - (B) Conidia formation
 - (C) Karyogamy
 - (D) Plasmogamy
88. Which group includes slime molds ?
- (A) Zygomycetes
 - (B) Ascomycetes
 - (C) Myxomycetes
 - (D) Basidiomycetes
89. Oomycetes differ from true fungi by having :
- (A) Chitin cell wall
 - (B) Cellulose cell wall
 - (C) Glycogen reserve
 - (D) Septate hyphae
90. Chlamydospores primarily function in :
- (A) Reproduction
 - (B) Nitrogen fixation
 - (C) Photosynthesis
 - (D) Survival under adverse conditions
91. Septate hyphae are characteristic of :
- (A) Zygomycetes
 - (B) Oomycetes
 - (C) Ascomycetes
 - (D) Myxomycetes
92. Myxomycetes differ from true fungi due to :
- (A) Lack of true hyphae
 - (B) Presence of chitin
 - (C) Presence of septa
 - (D) Glycogen storage

93. Deuteromycetes are called “imperfect fungi” because :
- (A) They lack hyphae
 - (B) Sexual stage is unknown
 - (C) They lack spores
 - (D) They are unicellular
94. Zygosporangium formation is associated with :
- (A) Asexual reproduction
 - (B) Sexual reproduction
 - (C) Budding
 - (D) Binary fission
95. Which reserve food material is typical of fungi ?
- (A) Starch
 - (B) Inulin
 - (C) Cellulose
 - (D) Glycogen
96. In *Aspergillus*, asexual spores are produced by :
- (A) Sporangia
 - (B) Asci
 - (C) Basidia
 - (D) Conidiophores
97. The vegetative structure of fungi is termed :
- (A) Mycelium
 - (B) Sporocarp
 - (C) Thallus
 - (D) Rhizoid
98. Which fungal group produces motile zoospores ?
- (A) Ascomycetes
 - (B) Basidiomycetes
 - (C) Oomycetes
 - (D) Deuteromycetes
99. Coenocytic hyphae are best described as :
- (A) Septate and uninucleate
 - (B) Aseptate and multinucleate
 - (C) Septate and multinucleate
 - (D) Aseptate and anucleate
100. Which of the following components is a defining feature of true fungal cell walls ?
- (A) Cellulose
 - (B) Silica
 - (C) Peptidoglycan
 - (D) Chitin

(Only for Rough Work)

4. Four alternative answers are mentioned for each question as—A, B, C & D in the booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

- Q. 1 (A) ● (C) (D)
 Q. 2 (A) (B) ● (D)
 Q. 3 (A) ● (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. : On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर—A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छँटना है। उत्तर को OMR आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

- प्रश्न 1 (A) ● (C) (D)
 प्रश्न 2 (A) (B) ● (D)
 प्रश्न 3 (A) ● (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उन्हें निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।