Roll No. .....

Question Booklet Number

O. M. R. Serial No.

M. Sc. (Fourth Semester)
(NEP) EXAMINATION, 2025-26
BOTANY
(Advanced Phycology)

Paper Code							
B	0	4	1	0	0	3	T

Questions Booklet Series
A

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)**

(Only for Rough Work)

1. Silicified cell is the feature of :

(A) Chlorophyceae

(B) Dinophyceae

(C) Bacillariophyceae

(D) Cryptophyceae

2. The cell wall of bacteria and cyanobacteria contains :

(A) Lipid

(B) Pectin

(C) Protein

(D) Muramic acid

3. Thermal algae can live in :

(A) Saline soil

(B) Hot water streams

(C) Desert

(D) Snowballs

4. A protein rich organism is :

(A) *Spirulina*

(B) *Ulothrix*

(C) *Oedogonium*

(D) *Chlamydomonas*

5. Water bloom is caused by :

(A) Blue Green Algae

(B) Hydrilla

(C) Bacteria

(D) Green algae

6. Carrageenin is a jellylike substance obtained from :

(A) *Sargassum*

(B) *Fucus*

(C) *Chondrus*

(D) *Kelp*

7. Which of the algal pigment is soluble in water ?

(A) Carotenoids

(B) Fucoxanthin

(C) Chlorophyll

(D) Phycocyanin

8. The chief photosynthetic pigment present in all algae is :

(A) Chlorophyll b

(B) Chlorophyll c

(C) Chlorophyll a

(D) Carotene

9. The primary product of photosynthesis in algae is :

(A) Protein

(B) Glucose

(C) Lipid

(D) Amino acid

10. The mucilaginous layer in many algae is made up of :

(A) Protein

(B) Lipid

(C) Pectic substances

(D) Glycogen

11. The term 'Phycology' was first introduced by :

(A) Harvey

(B) Fritsch

(C) Aristotle

(D) Lamarck

12. Frustule consists of two halves called :

(A) Epitheca and Hypotheca

(B) Testa and Tegmen

(C) Calyx and Corolla

(D) None of the above

13. Algae that live attached to rocks in streams are called :

(A) Epiphytes

(B) Epilithic

(C) Endophytic

(D) Planktons

14. Which alga is biofertilizer in rice field ?

(A) *Anabaena*

(B) *Chara*

(C) *Laminaria*

(D) *Spirogyra*

15. Which alga produce agarose for electrophoresis ?

(A) Brown algae

(B) Green algae

(C) Red algae

(D) Cyanobacteria

16. Algae living inside tissues of other plants are called :

(A) Epiphytes

(B) Endophytes

(C) Parasites

(D) Lichen

17. Agar-Agar is commercially used in :

(A) Textile industry

(B) Microbiology culture media

(C) Construction

(D) Fuel industry

18. Algae are considered ancestors of :

(A) Bryophytes

(B) Gymnosperms

(C) Pteridophytes

(D) Angiosperms

19. Which alga are used as biosensors in ecotoxicology ?

(A) Diatoms

(B) Chlorella

(C) Euglena

(D) All of the above

20. Single Oil Production are studied in :

(A) Chlorella

(B) Nannochloropsis

(C) Botryococcus

(D) All of the above

21. Important antibiotic derived from algae is :

(A) Chlorellin

(B) Penicillin

(C) Streptomycin

(D) None of the above

22. Eutrophication is mainly due to :

(A) Excess nitrates and phosphates

(B) Temperature changes

(C) Acid rain

(D) Global warming

23. Desmids are a group of :

(A) Red algae

(B) Green algae

(C) Brown algae

(D) Dinoflagellates

24. Algae responsible for maximum carbon fixation in oceans is :

(A) Diatoms

(B) Cyanobacteria

(C) Ulva

(D) Fucus

25. Photosynthetic efficiency is maximum in algae because :

(A) They are aquatic.

(B) They contain diverse pigment.

(C) They are unicellular.

(D) They lack roots.

26. First oxygen producer on earth was :

(A) Green algae

(B) Brown algae

(C) Red algae

(D) Cyanobacteria

27. Red tide phenomenon is associated with :

(A) Dinoflagellates

(B) Cyanobacteria

(C) Diatoms

(D) Green algae

28. Symbiotic association of algae and fungi is called as :

(A) Mycorrhiza

(B) Root nodule

(C) Lichen

(D) Endophytes

29. Bioactive compound from algae is mainly known for :

(A) Anti-microbial and Anticancer properties

(B) Increasing soil fertility

(C) Producing oxygen only

(D) Fixing nitrogen only

30. Which alga is used as bio indicator of pollution ?

(A) *Nostoc*

(B) *Diatoms*

(C) *Spirogyra*

(D) *Ulothrix*

31. Which algae is called "Green Gold" ?

(A) *Chlorella*

(B) *Laminaria*

(C) *Sargassum*

(D) *Ulva*

32. Source of lodine in diet is :

(A) *Ulothrix*

(B) *Laminaria*

(C) *Spirogyra*

(D) *Chara*

33. "Scytonemin", a bioactive compound with medicinal value, is produced by :

(A) Cyanobacteria

(B) Green algae

(C) Brown algae

(D) Red algae

34. SCP is widely produced from :

(A) Chlorella

(B) Spirulina

(C) Both (A) and (B)

(D) None of the above

35. Which algae is explored for biodiesel production ?

(A) *Botryococcus braunii*

(B) *Laminaria*

(C) *Polysiphonia*

(D) *Spirogyra*

36. In biotechnology, diatoms are used as :

(A) Bioindicator

(B) Nanotechnology templates

(C) Filtration aids

(D) All of the above

37. Which algae is used as vermifuge (expel worm) ?

(A) *Gelidium*

(B) *Gracilaria*

(C) *Polysiphonia*

(D) *Porphyra*

38. The deepest living algae are :

(A) Red algae

(B) Green algae

(C) Brown algae

(D) Blue Green Algae

39. Which coastal region in India has the largest sea weed source potential ?

(A) Maharashtra coast

(B) Gulf of Mannar

(C) Kerala coast

(D) West Bengal coast

40. Euglena contain cell wall made up of cellulose.

(A) True

(B) False

41. Bioethanol algae are :

(A) *Chlorella*

(B) *Scenedesmus*

(C) *Nostoc*

(D) *Spirulina*

42. Name of Bioluminescent algae is :

(A) *Chlamydomonas*

(B) *Nostoc*

(C) *Noctulica*

(D) *Ulva*

43. Algal Polysaccharides used in dental impression are :

(A) Agar

(B) Alginate

(C) Carrageenin

(D) Nostoc

44. Phycocolloids include :

(A) Agar, Carrageenin, Alginates

(B) Laminarin

(C) Starch

(D) Glycogen

45. Which algae is used in waste water management ?

(A) *Vaucheria*

(B) *Anabaena*

(C) *Chlorella*

(D) *Nostoc*

46. The Indian coastline is divided in how many coastal regions for marine algal distribution ?

(A) One

(B) Two

(C) Three

(D) Four

47. In which area is the most significant coral reef associated algae found in India ?

(A) Sundarbans

(B) Odisha coast

(C) Lakshadweep and Andaman Nicobar

(D) Mumbai coast

48. The west coast of India is richer in marine algal diversity as compared to east coast mainly due to :

(A) Low salinity

(B) Rock substratum

(C) High pollution

(D) Tidal activity

49. Brown algae (Phaeophyceae) are more abundant along the :

(A) East coast

(B) Andaman coast

(C) West coast

(D) Chilka lake

50. The intertidal zone is important for marine algae because :

(A) It lacks sunlight.

(B) It provides attachment surfaces.

(C) It is freshwater.

(D) It has no wave action.

51. Which coast has more sandy shores ?

(A) West coast

(B) East coast

(C) Lakshadweep

(D) Andaman

52. Algal mass culture requires :

(A) Sunlight

(B) Water

(C) Fresh air

(D) All of the above

53. Which nutrient is essential in algal mass culture ?

(A) Nitrogen

(B) Silver

(C) Lead

(D) Mercury

54. Algae are cultured in large amount for the production of :

(A) Oxygen

(B) Gold

(C) Biofuel

(D) Iron

55. Spirulina is mainly used as :

(A) Fuel

(B) Protein rich food supplement

(C) Biofertilizer

(D) Plastic material

56. Which factor is most important for algal growth ?

(A) Darkness

(B) Carbon dioxide

(C) Sand

(D) Plastic

57. Open pond systems are commonly used for :

(A) Small laboratory

(B) Virus culture

(C) Mass cultivation at low cost

(D) Animal culture

58. Contamination in algal culture is mainly due to :

(A) Bacteria and Fungi

(B) Sand

(C) Oxygen

(D) Light

59. The main purpose of isolating algae is to :

(A) Increase contamination

(B) Obtain pure culture

(C) Kill microorganisms

(D) Change color

60. Which method is commonly used in isolating of unicellular algae ?

(A) Centrifugation

(B) Heating

(C) Serial dilution

(D) Filtration with cloth

61. Which instrument is used to pick simple algal cell under a microscope ?

(A) Thermometer

(B) Inoculating needle

(C) Micropipette

(D) Brush

62. The most suitable medium for culturing many fresh water algae is :

(A) BG-11medium

(B) Nutrient broth

(C) Potato dextrose sugar

(D) Blood agar

63. Antibiotics are sometimes added to algal cultures to :

(A) Increase algal growth

(B) Remove bacterial contamination

(C) Increase temperature

(D) Change color

64. The first step in algal isolation from natural water is :

(A) Drying the sample

(B) Collecting water sample

(C) Adding sugar

(D) Heating

65. Which group of algae is primarily used in reclamation of Usar land ?

(A) Blue Green algae

(B) Green algae

(C) Red algae

(D) Diatoms

66. The mucilaginous sheath of blue green algae helps in :

(A) Soil erosion

(B) Improving soil structure and aggregation

(C) Water pollution

(D) Reduce fertility

67. What is impact of algae on the porosity of alkaline soil ?

(A) It decreases porosity.

(B) It makes the soil harden.

(C) It increases porosity.

(D) It has no effect.

68. The process of using algae to treat polluted or degraded soil is called :

(A) Bioremediation

(B) Salinization

(C) Afforestation

(D) Eutrophication

69. Blue Green Algae aid in reclamation by removing ..... from the atmosphere and adding ..... in the soil.

(A) Oxygen, Nitrogen

(B) Carbon dioxide, Oxygen

(C) Nitrogen, Carbon dioxide

(D) Hydrogen, Oxygen

70. What is the major chemical change that occur in the soil due to algal treatment ?

(A) Reduction in exchangeable sodium (Na^+)

(B) Reduction in carbon content

(C) Increase in pH

(D) Increase in calcium content

71. Reclamation of usar land using algae increases which of the following ?

(A) Soil alkalinity

(B) Water holding capacity

(C) Soil permeability

(D) Both (B) and (C)

72. Which algae is commonly used in sewage treatment ponds ?

(A) *Scenedesmus*

(B) *Anabaena*

(C) *Nostoc*

(D) *Volvox*

73. Low sewage velocity generally :

(A) Prevents algal growth

(B) Promotes algal bloom

(C) Reduces nutrients

(D) Increases oxygen

74. Algae help to reduce which of the following in sewage water ?

(A) pH

(B) Biological oxygen demand

(C) Salinity

(D) Temperature

75. The mutual relationship between algae and bacteria in sewage pond is :

(A) Parasitism

(B) Competition

(C) Mutualism

(D) Predation

76. In sewage oxidation ponds algae help in purification by :

(A) Producing toxins

(B) Releasing oxygen

(C) Increasing turbidity

(D) Blocking sunlight

77. Oxygen released by algae is utilized by :

(A) Aerobic bacteria

(B) Anaerobic bacteria

(C) Fungi only

(D) Viruses

78. Which nutrients mainly cause algal bloom in polluted water ?

(A) Calcium and Magnesium

(B) Nitrogen and Phosphorus

(C) Sodium and Potassium

(D) Iron and Copper

79. Algae contribute to global climate regulation mainly by :

(A) Nitrogen fixation

(B) Carbon sequestrian

(C) Sulphur oxidation

(D) Methane production

80. Marine Phytoplankton are responsible for approximately what percentage of global oxygen production ?

(A) 10%

(B) 25%

(C) 50%

(D) 90%

81. Which microscopic algae are major contributors to oceanic carbon fixation ?

(A) *Spirogyra*

(B) *Diatoms*

(C) *Ulothrix*

(D) *Oedogonium*

82. Which factor enhances algal carbon sequestration ?

(A) High nutrient availability

(B) Absence of sunlight

(C) High pollution

(D) Low temperature only

83. The sinking of dead phytoplankton to deep ocean layers helps to :

(A) Release carbon quickly

(B) Store carbon for long periods

(C) Increase surface carbondioxide

(D) Stop photosynthesis

84. Calcification in marine algae involves the formation of :

(A) Calcium carbonate

(B) Silica

(C) Iron oxide

(D) Magnesium sulphate

85. The long-term storage of carbon in deep ocean after algal death is known as :

(A) Nitrogen cycle

(B) Water cycle

(C) Biological carbon pump

(D) Sulphur cycle

86. Why Photosystem II is absent in heterocyst ?

(A) To increase oxygen production

(B) To prevent oxygen formation

(C) To increase ATP

(D) To enhance respiration

87. Carbon sequestration through algal photosynthesis primarily converts CO_2 into :

(A) Methane

(B) Ammonia

(C) Nitrite

(D) Organic carbon

88. Which enzyme is responsible for nitrogen fixation ?

(A) RuBisCO

(B) Catalase

(C) Nitrogenase

(D) Amylase

89. Which compound from red algae shows antiviral and anticancer properties ?

(A) Carrageenan

(B) Cellulose

(C) Starch

(D) Lignin

90. Which group is commonly called blue green algae ?

(A) Green algae

(B) Diatoms

(C) Cyanobacteria

(D) Dinoflagellates

91. Which cyanobacterial genus produces anticancer compound "Cryptophycin" ?

(A) *Anabaena*

(B) *Nostoc*

(C) *Oscillatoria*

(D) *Microcystis*

92. Which of the following algae is known for producing antimicrobial compounds ?

(A) *Chlorella*

(B) *Spirogyra*

(C) *Ulva*

(D) All of the above

93. The anticancer activity of algal compounds is mainly due to :

(A) Promotion of cell division

(B) Inhibition of apoptosis

(C) Induction of apoptosis in cancer cells

(D) Increasing mutation rate

94. Microalgae are considered a good source of :

(A) Antibiotics

(B) Antioxidants

(C) Antitumor agents

(D) All of the above

95. Which cyanobacterium is known to produce bioactive peptides like microcystins ?

(A) *Nostoc*

(B) *Anabaena*

(C) *Microcystis*

(D) *Chlamydomonas*

96. The antimicrobial effect of algal extracts is mainly effective against :

(A) Bacteria

(B) Fungi

(C) Viruses

(D) All of the above

97. Which pigment from cyanobacteria shows antioxidant and anticancer potential ?

(A) Chlorophyll b

(B) C-Phycocyanin

(C) Xanthophyll

(D) Carotene

98. Akinetes are characterized by :

(A) Thick cell wall

(B) Thin cell wall

(C) Absence of cytoplasm

(D) Lack of pigments

99. Akinetes help cyanobacteria in :

(A) Nitrogen fixation

(B) Photosynthesis

(C) Perennation and Survival

(D) Locomotion

100. The storage polysaccharides in green algae are mainly to due :

(A) Laminarin

(B) Mannitol

(C) Glycogen

(D) Starch

(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 छाँटना 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।