

Roll No. ....

Question Booklet Number

O. M. R. Serial No.

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## M. Sc. (Biochemistry) (Fourth Semester)

### EXAMINATION, 2022-23

#### ENVIRONMENTAL BIOCHEMISTRY

Paper Code						
B	C	H	4	0	0	1

Questions Booklet  
Series

**A**

Time : 1:30 Hours ]

[ Maximum Marks : 75

#### Instructions to the Examinee :

परीक्षार्थियों के लिए निर्देश :

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.
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. The term 'biodiversity' refers to :
  - (A) totality of species of a region
  - (B) totality of ecosystem of a region
  - (C) totality of genes of a region
  - (D) All of above
  
2. An American plant that has become a waterweed in India is :
  - (A) *Eichhornia crassipes*
  - (B) *Typha latifolia*
  - (C) *Cyperus rotundus*
  - (D) *Trapa bispinosa*
  
3. Endemic plants are those which are :
  - (A) found in alpine region
  - (B) gregarious in habit
  - (C) cosmopolitan in distribution
  - (D) restricted to a specified area
  
4. Plants of flower and fruit trees along road sides are included in :
  - (A) Agroforestry programme
  - (B) Social forestry programme
  - (C) Urban forestry programme
  - (D) Van Mahotsava
  
5. Decline in our forests is due to :
  - (A) soil erosion
  - (B) no afforestation
  - (C) afforestation
  - (D) indiscriminate felling of trees and grazing
  
6. What is cause of destruction of biologically rich and unique habitats ?
  - (A) Increasing human population
  - (B) Consumption of resources
  - (C) Pollution
  - (D) All of the above
  
7. Ginkgo has been removed from the list of endangered species due to :
  - (A) gene bank
  - (B) extensive cultivation
  - (C) in-situ cultivation
  - (D) ex-situ cultivation
  
8. What is the approximate number of species of fish described all over the world ?
  - (A) 4780
  - (C) 43000
  - (B) 26959
  - (D) 1550
  
9. Which of the following levels of biodiversity are interrelated ?
  - (I) Genetic diversity
  - (II) Species diversity
  - (III) Community and ecosystem diversity

**Codes :**

  - (A) I and II
  - (B) II and III
  - (C) I and III
  - (D) I, II and III

10. What is the basis of speciation ?
- (A) Amount of genetic variation
  - (B) Kinds of variation
  - (C) Variation in ecosystem and community
  - (D) Species diversity
11. An ecosystem resists because it is in a state of :
- (A) imbalance
  - (B) homeostasis
  - (C) shortage
  - (D) deficiency of light
12. In ecological sense desert animals are termed as :
- (A) arboreal
  - (B) benthos
  - (C) cursorial
  - (D) xeric
13. The lowest temperature of any land mass of the Universe was recorded in :
- (A) North America (1949)
  - (B) Mt. Everest, Himalayas (1954)
  - (C) Antarctica (1982)
  - (D) Siberia (1947)
14. What is studied under the microcosm ?
- (A) Ecosystem
  - (B) Living organisms
  - (C) Non-living things
  - (D) None of the above
15. The soil nearby surface is usually darker than about one meter down, this is because of the fact that the top soil :
- (A) is richer in Ca and Mg
  - (B) contains more organic matter
  - (C) is wetter than the sub soil
  - (D) is drier than the sub soil
16. In summer in lakes the surface water with high temperature separated from the cold bottom layer by mid water is called :
- (A) epilimnion
  - (B) thermocline
  - (C) thermal stratification
  - (D) metalimnion
17. Law of tolerance was formulated by :
- (A) Taylor
  - (B) Shelford
  - (C) Clapham
  - (D) Kendeigh

18. How deep is photic or euphotic zone from the upper surface of sea ?
- (A) 10 meters  
(C) 200 meters  
(B) 100 meters  
(D) 500 metres
19. The hypersaline waters are found in :
- (A) lakes located in the alpine regions  
(B) lakes located in the arid and semiarid regions  
(C) lakes located in the tropical regions  
(D) estuaries
20. The National Institute of Oceanography is situated at :
- (A) Mumbai  
(B) Panaji (Goa)  
(C) Lucknow  
(D) Chennai
21. Anthropogenic extinction is caused by :
- (A) environmental changes  
(B) human activities  
(C) catastrophes  
(D) Both (A) and (B)
22. Planting trees on public and common land is known as :
- (A) social forestry  
(B) farm forestry  
(C) agroforestry  
(D) reforestation.
23. An example for in-situ biological conservation method is to establish :
- (A) Seed banks  
(B) Botanical gardens  
(C) Zoos  
(D) Biosphere reserve
24. The Earth Summit held at Rio de Janeiro in 1992 resulted into :
- (A) Compilation of Red List  
(B) Establishment of Biosphere Reserves  
(C) Convention on Biodiversity  
(D) IUCN
25. Approximate percentage of endemic flowering plants in India is :
- (A) 23%  
(B) 33%  
(C) 53%  
(D) 63%

26. Select the correct statement :
- (A) Biodiversity increases from the poles to the equator.
  - (B) 925 animal species and 1014 plant species in India are characterized as Critically Endangered in the Red List.
  - (C) As on September 2002, India had 581 protected species
  - (D) All of the above
27. Plants and animals live together close association in :
- (A) leads
  - (B) biomes
  - (C) biospheres
  - (D) ecotone
28. In a totally burnt forest which species will grow first ?
- (A) Mosses
  - (B) Ferns
  - (C) Bryophytes and fungi
  - (D) Pteridopny
29. Plants that grow in saline areas are called :
- (A) halophytes
  - (B) psammophytes
  - (C) corticolous
  - (D) hygrophytes
30. Which of these is/are considered the major biomes of world ?
- (A) Tundra and desert
  - (B) Tropical rain forest
  - (C) Tropical deciduous forest
  - (D) All of the above
31. The soil which is transported by force of gravity is known as :
- (A) colluvial
  - (B) eolian
  - (C) alluvial
  - (D) glacial soil
32. Treeless biome is :
- (A) Tundra
  - (B) Desert
  - (C) Grassland
  - (D) All of the above

33. The size of clay particle is :
- (A) 0.2 to 0.03 mm
  - (B) 1 to 2 mm
  - (C) less than 0.0022 mm
  - (D) 2.0-0.06 mm
34. Consider the following four statements (a-d) about certain desert animals such as kangaroo rat :
- (a) They have dark colour and high rate of reproduction and excrete solid urine
  - (b) They do not drink water, breath at a slow rate to conserve water and have body covered with thick hairs
  - (c) They feed on dry sands and do not require drinking water
  - (d) They excrete concentrated urine and do not use water for regulating body temperature.
- Which two above statements for such animals are true ?
- (A) (c) and (a)
  - (B) (b) and (c)
  - (C) (c) and (d)
  - (D) (a) and (b)
35. Which of the following has become extinct in India ?
- (A) Lion
  - (B) Tiger
  - (C) Two-horned Rhino
  - (D) Dodo
36. Kaziranga wild life sanctuary is famous for :
- (A) Tiger
  - (B) Musk deer
  - (C) Elephant
  - (D) Rhino
37. Which is the first national park established in India ?
- (A) Bandipur national park
  - (B) Corbett national park
  - (C) Kanha national park
  - (D) Periyar national park
38. Which of the following is correct ?
- (A) Biodiversity refers to the totality of genes species and ecosystem of a region
  - (B) Within-community diversity is called alpha diversity
  - (C) National parks are traditional protected areas.
  - (D) All of the above
39. Which of the following is the next step after water abstraction in waste water treatment ?
- (A) Treatment
  - (B) Supply to consumers
  - (C) Supply to receiving body
  - (D) Combine with stormwater

40. Plants that lack perennating buds and are annuals can be placed in one of the life forms :
- (A) phanerophyte  
(C) cryptophyte  
(B) chamaephyte  
(D) therophytes
41. During adverse season 'therophytes' survive by :
- (A) bulbs  
(B) tubers  
(C) rhizomes  
(D) seeds
42. Pickup the xerophytic set :
- (A) Zizyphus, Opuntia, Euphorbia  
(B) Musa, Ceratophryllum, Legume  
(C) Labiateae, Zizyphus, Opuntia  
(D) Hydrilla, Zizyphus, Pisum
43. How is Chemical Oxygen Demand (COD) calculated ?
- (A) Waste water is oxidised chemically using strontium in acid solutions  
(B) Waste water is oxidised chemically using bromine in acid solutions  
(C) Waste water is oxidised chemically using dichromate in acid solutions  
(D) Waste water is oxidised chemically using sodium in acid solutions
44. For green house effect, which of the following statements are correct ?
- P : Intensive plantation can produce large amount of CO which traps heat and produces the green house effect.
- Q : Extensive use of fossil fuel and intensive plantation result in the production of large amount of CO<sub>2</sub> and H<sub>2</sub>O forming a thick layer that prevents the heat from being reradiated out.
- R : Excessive use of fossil fuel produces heat, which is absorbed by the CO<sub>2</sub> and water vapour in the atmosphere and causes greenhouse effect.
- S : Increasing level of CO<sub>2</sub> tends to warm air in the lower layer of the atmosphere on global scale resulting in global warming
- (A) P and Q  
(B) Q and R  
(C) R and S  
(D) P and S



45. Which among the following are greenhouse gases ?
- (1) Surface ozone (O<sub>3</sub>)
  - (2) Ammonia (NH<sub>3</sub>)
  - (3) Methane (CH<sub>4</sub>)
  - (4) Carbon monoxide (CO)
  - (5) Nitrous oxide (N<sub>2</sub>O)
- Choose the most appropriate answer from the options given below
- (A) 1, 2 and 3 only
  - (B) 1, 3 and 5 only
  - (C) 2, 3 and 4 only
  - (D) 3, 4 and 5 only
46. Reason of lung cancer is :
- (A) Coal mining
  - (B) Calcium fluoride
  - (C) Cement factory
  - (D) Bauxite mining
47. The result of Ozone hole is :
- (A) Global Warming
  - (B) Acid rain
  - (C) Greenhouse effect
  - (D) The UV radiations reach the earth
48. Ozone hole means :
- (A) hole in the stratosphere
  - (B) same concentration of ozone
  - (C) decrease in concentration of ozone
  - (D) increase in the concentration of ozone
49. Ganga Action Plan was started in :
- (A) 1947
  - (B) 1956
  - (C) 1982
  - (D) 1985
50. Fluoride pollution mainly affects :
- (A) kidney
  - (B) heart
  - (C) brain
  - (D) teeth
51. *E. coli* is used as an indicator organism to determine pollution of water with :
- (A) pollen of aquatic plants
  - (B) heavy metals
  - (C) fecal matter
  - (D) industrial effluents

52. BOD is a measure of :
- (A) amount of oxygen needed by green plants during night
  - (B) industrial wastes poured into water bodies
  - (C) amount of CO inseparably combined with hemoglobin
  - (D) Extent to which water is polluted with organic compounds
53. Frequent occurrence of water blooms in a lake indicates which of the following ?
- (A) Deficiency of nutrients
  - (B) Deficiency of oxygen
  - (C) Excessive availability of nutrients
  - (D) Absence of herbivores in the lake
54. A range of loudness of sound of 70-90 decibels is rated as :
- (A) very loud
  - (B) painful
  - (C) quiet
  - (D) uncomfortable
55. SO<sub>2</sub> pollution affects :
- (A) nucleus
  - (B) mitochondria
  - (C) chloroplast
  - (D) vacuole
56. Chernobyl nuclear tragedy occurred on which date ?
- (A) 9th August 1945
  - (B) 9th August 1946
  - (C) 26 April 1986
  - (D) 3rd December 1984
57. Most stable ecosystem is :
- (A) Ocean
  - (B) Forest
  - (C) Desert
  - (D) Mountain
58. About national parks which of the following statement is correct ?
- (A) They protect only plants
  - (B) They protect both rare plants and animals only
  - (C) They protect both rare endangered plants and animals only
  - (D) They maintain viable populations of all native species and subspecies of plants and animals.
59. Which of the following is expected to have the highest value (gm/m<sup>2</sup>/yr) in a grassland ecosystem ?
- (A) Secondary Production
  - (B) Tertiary Production
  - (C) Gross Production (GP)
  - (D) Net Production (NP)

60. Temperate plants are classified by :
- (A) Warming
  - (B) Climent
  - (C) Haeckel
  - (D) Raunkiaer
61. The term a species refers to :
- (A) specific and habitual function
  - (B) specific place where an organism lives
  - (C) competitive power of an organism
  - (D) specific function of organism
62. Which of the following survivorship curve is suitable for the organisms who breeds several times during the course of their life span ?
- (A) Type IV
  - (B) Type III
  - (C) Type II
  - (D) Type I
63. Number of endangered species of angiosperms in India is :
- (A) 487
  - (B) 3000
  - (C) 5000
  - (D) 15000
64. The carrying capacity of a population is determined by its :
- (A) Birth rate
  - (B) Death rate
  - (C) Limiting resource
  - (D) Reproductive status
65. The major photochemical smog is\_\_\_\_\_.
- (A) Hydrogen peroxide
  - (B) Chlorofluorocarbon
  - (C) Peroxyacetyl nitrate
  - (D) All of the above
66. A community is defined as :
- (A) A group of birds
  - (B) A collection of species
  - (C) Interacting populations
  - (D) An interactive ecosystem
67. Distribution of different plant geographically is called :
- (A) Allopatric
  - (B) Sympatric
  - (C) Geopatric
  - (D) Sibling

68. Group of two or more than two plant species is called as :
- (A) Plant community
  - (B) Animal ecosystem
  - (C) Plant ecosystem
  - (D) Ecological niche
69. Study of environment and animals' relation :
- (A) Ecosystem
  - (B) Phytosociology
  - (C) Biotic community
  - (D) Ecology
70. Which of the following statements is true regarding individuals of same species ?
- (A) They are interbreeding
  - (B) They live in same niche
  - (C) They live in different niche
  - (D) They live in different habitat
71. Which of the following isolation is important for speciation ?
- (A) Seasonal
  - (B) Tropical
  - (C) Behavioral
  - (D) Reproductive
72. Which of the following is called the secondary air pollutant ?
- (A) PANs
  - (B) Ozone
  - (C) Carbon monoxide
  - (D) Nitrogen dioxide
73. Adolescents, especially late developers, often suffer from anxiety and a psychosomatic disorder called :
- (A) phobias
  - (B) hypochondria
  - (C) neurasthenia
  - (D) post-traumatic stress disorder
74. Which of the following is a psychological disorder ?
- (A) Anxiety disorders
  - (B) Obsessive-compulsive disorders
  - (C) Attention deficit disorder
  - (D) All of the above
75. Schizophrenia is characterized by :
- (A) distorted thought and disturbed emotions
  - (B) incoherent and bizarre behavior lasting for a week or more
  - (C) delusion, auditory, hallucinations
  - (D) All of the above

76. Interaction of alcohol and aspirin if consumed together is :
- (A) increased sedation
  - (B) increased risk of damage to gastric mucosa
  - (C) marked drowsiness
  - (D) increase cardiovascular effects
77. Opiate narcotics are used for :
- (A) suppressing pain
  - (B) reducing anxiety and tension
  - (C) causing lethargy
  - (D) All of the above
78. Drug which induces dreamy state of consciousness is :
- (A) sedative
  - (B) hallucinogen
  - (C) barbiturates
  - (D) depressant
79. Our growth rate has increased dramatically. Which is most appropriate explanation ?
- (A) We steadily developed the capacity to expand into new habitats
  - (B) The carrying capacities of the environments when already occupied were increased.
  - (C) A series of limiting factors was removed.
  - (D) All of the above
80. Which of the following is most well-known synthetic teratogen ?
- (A) thalidomide
  - (B) psilocin
  - (C) pulocycin
  - (D) mescaline
81. Ruthless exploitation and pollution of the environment has increased the magnitude of waste materials which has disturbed the operations of all important :
- (A) Biomes
  - (B) Ecosystems
  - (C) Bio-geo-chemical cycles
  - (D) All of the above
82. The study of inter-relationship between living organisms and their environment is called :
- (A) Ecosystem
  - (B) Phytogeography
  - (C) Ecology
  - (D) Phytosociology

83. Bioaugmentation involves :
- (A) eliminating sludge
  - (B) plants usage for bioremediation
  - (C) addition of microbes to a cleanup site
  - (D) bioventing
84. An association of two species in which both species are benefited is called :
- (A) Commensalism
  - (B) Mutualism
  - (C) Proto-operation
  - (D) Amensalism.
85. Succession involves a turnover of species during :
- (A) micro evolutionary time
  - (B) macro evolutionary time
  - (C) ecological time
  - (D) the season of the year
86. Select the statement, which best explains commensalism :
- (A) One organism is benefited
  - (B) Both the organisms are benefited
  - (C) One organism is benefited other is not affected
  - (D) One organism is benefited other is affected
87. Community is best defined as aggregation :
- (A) individuals of same kind
  - (B) individuals of different kinds
  - (C) individuals of a population
  - (D) population of different species
88. Parasite can be best explained as an organism which depends on :
- (A) others for food
  - (B) others for shelter
  - (C) others for both food and shelter
  - (D) others for reproduction
89. Rainfall occurs in chapparal during :
- (A) The whole year
  - (B) Summer
  - (C) Winter
  - (D) Spring-autumn
90. Deserts occur in areas of :
- (A) Adverse human disturbance
  - (B) Underground saline water
  - (C) Little underground water
  - (D) Rain shadow
91. All types of latitudinal biomes are found telescoped on high hills found in :
- (A) Tropical areas
  - (B) Subtropical areas
  - (C) Temperate areas
  - (D) None of the above

92. Which of the following is not Phase-I reaction ?
- (A) Oxidation
  - (B) Reduction
  - (C) Hydrolysis
  - (D) Conjugation
93. In India, rain forests are found in :
- (A) Uttar Pradesh and Bihar
  - (B) Madhya Pradesh and Odisha
  - (C) Tamil Nadu and Andhra Pradesh
  - (D) Western Ghats and Eastern Himalayas
94. Temperate forests occur in :
- (A) Indo-Gangetic plains
  - (B) Himalayas
  - (C) Eastern India
  - (D) Southern Peninsula
95. Which of the following represents the regulative function of forest ?
- (A) Storage and release of gas
  - (B) Production of wood
  - (C) Production of essential oils
  - (D) Conservation of soil and water.
96. Succulent xerophytes are likely to be found in :
- (A) Tropical rain forest
  - (B) Deciduous forest
  - (C) Desert
  - (D) Tundra
97. Savannahs are :
- (A) Tropical rain forest
  - (B) Desert
  - (C) Grassland with scattered trees
  - (D) Dense forest with close canopy
98. Which one of the following represents a renewable source of energy ?
- (A) Petroleum
  - (B) Coal
  - (C) Nuclear fuel
  - (D) Trees
99. Forest area in India is about :
- (A) 9% of geographical area
  - (B) 19% of geographical area
  - (C) 29% of geographical area
  - (D) 21% of geographical area
100. Mild grazing in grassland by herbivores :
- (A) retards growth of grasses
  - (B) arrests growth of grasses
  - (C) stimulates growth of grasses
  - (D) destroys vegetation

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।