

M.Sc. Botany

12P/219/29

Question Booklet No.....

1621

(To be filled up by the candidate by blue/black ball-point pen)

Roll No.

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Roll No.

(Write the digits in words)

Serial No. of OMR Answer Sheet

Day and Date

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only **blue/black ball-point pen** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope*.
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your *Roll Number and Serial Number of the Answer Sheet by pen* in the space provided above.
5. **On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.**
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle* in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

No. of Questions/प्रश्नों की संख्या : 150

Time/समय : 2 Hours/घण्टे

Full Marks/पूर्णांक : 450

Note/नोट : (1) Attempt as many questions as you can. Each question carries 3 marks. One mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न 3 अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. Dolipore septum is a characteristic feature of

- (1) Oomycetes (2) Zygomycetes (3) Ascomycetes (4) Basidiomycetes

2. Which one is imperfect fungus?

- (1) *Alternaria* (2) *Claviceps* (3) *Ustilago* (4) *Peziza*

3. Red tide refers to bloom of algae that colour the water red. The alga(e) are members of

- (1) Cyanophyceae (2) Dinophyceae
(3) Rhodophyceae (4) Bacillariophyceae

4. Which of the following include a prokaryotic and a eukaryotic alga, each with phycobiliproteins?
- (1) *Spirulina* and *Pyrocystis* (2) *Nostoc* and *Polysiphonia*
(3) *Anabaena* and *Vaucheria* (4) *Aulosira* and *Dunaliella*
5. During the process of the formation of wine using yeast, which of the following is not formed?
- (1) CO₂ (2) Pyruvic acid (3) Ethanol (4) Acetyl coenzyme A
6. What will you suggest to a farmer to minimise his use of fertilizer?
- (1) Use of *Pseudomonas* before crop (2) Use of *Cladophora* with rice
(3) Use of cyanobacteria with wheat (4) *Sesbania* before crop
7. Point richness refers to the number of species in an area and is also known as
- (1) alpha diversity (2) beta diversity
(3) gamma diversity (4) gamma richness
8. In which of the following, the xylem core is stellate?
- (1) Haplostele (2) Actinostele (3) Siphonostele (4) Plectostele
9. In allopatric speciation, the initial barrier to gene flow is
- (1) behavioural (2) geographical (3) physiological (4) genetic
10. How many molecules of oxygen are required during glycolysis of one molecule of glucose in an aerobic eukaryote?
- (1) 0 (2) 1 (3) 6 (4) 12

11. Which of the following plant fixes carbon dioxide by crassulacean acid metabolism?
(1) Oak tree (2) Cactus (3) Gram (4) Red alga
12. Which one of the following incorporates first amino acid during translation process?
(1) GAU (2) UGA (3) AUG (4) UAG
13. Phenomenon of guttation was discovered by
(1) Bellings (2) J. C. Bose (3) Godlewski (4) Bergerstein
14. An organism with AAAABB genotype is
(1) autopolyploid (2) allopolyploid
(3) double polyploid (4) autoallopolyploid
15. In a flowering plant with $n = 10$, a trisomic will have the following number of chromosomes in its somata cells
(1) 11 (2) 13 (3) 21 (4) 30
16. Which of the following is not true for DNA structure?
(1) Total purines are equal to total pyrimidines
(2) Two strands are polymers of nucleosides
(3) Two strands are antiparallel
(4) All the above three statements are true
17. If adenine content of a DNA molecule is 20%, then what will be the percentage of cytosine in it?
(1) 20 (2) 30 (3) 80 (4) Data insufficient

18. F_2 phenotypic ratio for a dihybrid cross for quantitative trait is
(1) 9:3:3:1 (2) 1:1:1:1 (3) 1:4:6:4:1 (4) 9:6:1
19. Father of Neurospora genetics is
(1) Dodge (2) Morgan (3) Galton (4) Benzer
20. Which of the following is true of nucleosome?
(1) Concept propagated by Oudet
(2) H_1 histone is found in the core particle and is rich in arginine
(3) Nu body is formed of a histone molecule
(4) DNA around core particle is 146 bp long and forms two coils
21. Lowest permanent wilting coefficient is an attribute of
(1) loam soil (2) clay soil
(3) sand (4) loam and clay soils
22. Club shaped antheridia are present in
(1) *Batrachospermum* (2) *Rhizopus*
(3) *Funaria* (4) *Pteris*
23. The term ecosystem was coined by
(1) Forbes (2) Tensley (3) Warming (4) Odum
24. Syngeneic condition is characteristic of
(1) Tiliaceae (2) Malvaceae (3) Asteraceae (4) Orchidaceae

25. Endodermis is not found in stem of
(1) *Psilotum* (2) *Lycopodium clavatum*
(3) *Lycopodium serratum* (4) *Rhynia*
26. Sperms of *Azolla* are
(1) straight uniciliate (2) straight multiciliate
(3) coiled uniciliate (4) coiled multiciliate
27. The edible part of *Pinus* seed is
(1) pericarp (2) female gametophyte
(3) diploid perisperm (4) endosperm
28. Black rust of wheat is caused by
(1) *Rhizopus* (2) Yeast (3) *Penicillium* (4) *Puccinia*
29. Eusporangiate mode of sporangium development is found in
(1) *Funaria* (2) *Marchantia* (3) *Rhynia* (4) *Lycopodium*
30. Which species of *Azolla* is native to India?
(1) *Azolla rubra* (2) *Azolla circinalis*
(3) *Azolla pinnata* (4) *Azolla microphylla*
31. If the vegetation of a place is burnt, the one first to appear will be
(1) mosses (2) lichens (3) liverworts (4) grasses

32. Which of the following is the correct sequence of the food chain?

- (1) Fallen leaves → Bacteria → Insect larva → Birds
- (2) Phytoplankton → Zooplankton → Fish → Birds
- (3) Grasses → Fox → Rabbit → Man
- (4) Grasses → Chameleon → Insects → Birds

33. In big cities, air pollution is due to

- (1) burning of fossil fuel
- (2) thermal power plants
- (3) sewage
- (4) H₂S

34. A typical angiospermic embryo sac is usually

- (1) 1 celled
- (2) 2 celled
- (3) 4 celled
- (4) 7 celled

35. Chlorophyll absorbs

- (1) red light only
- (2) blue light only
- (3) blue as well as red light
- (4) green light

36. Carbon dioxide joins the photosynthetic pathway during

- (1) light reaction
- (2) dark reaction
- (3) photosystem I
- (4) photosystem II

37. In gymnosperms, pollination occurs exclusively by

- (1) wind
- (2) insects
- (3) water
- (4) man

38. Transfusion tissue is met within
- (1) leaves of *Cycas* (2) stems of *Selaginella*
(3) roots of monocots (4) capsule of *Funaria*
39. Molecular scissor used in genetic engineering is
- (1) DNA polymerase (2) DNA ligase
(3) restriction endonuclease (4) helicase
40. What does Bt stand for in popular crop of Bt Cotton?
- (1) Biotechnology (2) *Bacillus tomentosa*
(3) *Bacillus thuringiensis* (4) Biotransgenic
41. Palmella stage occurs in
- (1) *Spirogyra* (2) *Aspergillus* (3) *Ulothrix* (4) *Cystopus*
42. The most common nitrogen fixing algae in rice field is
- (1) *Oscillatoria* (2) *Nostoc*
(3) *Cylindrospermum* (4) *Aulosira*
43. Carragenin, a jelly like substance is derived from marine algae known as
- (1) kelp (2) flagellates (3) Irish moss (4) diatoms
44. The fruiting body of *Aspergillus* is called
- (1) cleistothecium (2) hypanthodium
(3) apothecium (4) perithecium

45. Late blight of potato is caused by

- | | |
|-----------------------------------|----------------------------------|
| (1) <i>Albugo candida</i> | (2) <i>Fusarium monoliformae</i> |
| (3) <i>Phytophthora infestans</i> | (4) <i>Alternaria solani</i> |

46. Smut of maize is caused by

- | | |
|----------------------------|----------------------------|
| (1) <i>Ustilago avenae</i> | (2) <i>Ustilago maydis</i> |
| (3) <i>Ustilago hordei</i> | (4) <i>Ustilago nuda</i> |

47. Most of the seaweeds belong to class

- | | | | |
|-------------------|-----------------|------------------|------------------|
| (1) Chlorophyceae | (2) Dinophyceae | (3) Phaeophyceae | (4) Cyanophyceae |
|-------------------|-----------------|------------------|------------------|

48. Sexual reproduction is absent among

- | | |
|--------------------|--------------------|
| (1) Phycomycetes | (2) Ascomycetes |
| (3) Basidiomycetes | (4) Deuteromycetes |

49. Mushrooms, puff balls, toadstools belong to the class

- | | |
|--------------------|--------------------|
| (1) Phycomycetes | (2) Ascomycetes |
| (3) Basidiomycetes | (4) Deuteromycetes |

50. Annulus in moss capsule separates

- | | |
|------------------------------|------------------------------|
| (1) operculum from columella | (2) theca from columella |
| (3) operculum from theca | (4) columella from apophysis |

51. The development of sporophytes from moss gametophytes without sexual fusion is called
(1) apogamy (2) apospory (3) amphimixis (4) parthenogenesis
52. In which of the following groups would you place a plant which produces spores and embryos but lacks seeds and vascular tissue?
(1) Fungi (2) Pteridophytes (3) Bryophytes (4) Gymnosperms
53. Meiosis does not take place in the formation of gametes from
(1) prothallus (2) protonema (3) sporangium (4) promycelium
54. Which of the following does not have a central pith?
(1) Siphonostele (2) Dictyostele (3) Protostele (4) Solenostele
55. The *Cycas* is a gymnosperm because
(1) its xylem consists of tracheids
(2) it lacks ovary but has exposed ovules
(3) it forms seeds
(4) it bears pollen grains
56. Fruits are not formed in gymnosperms due to the absence of
(1) ovary (2) pollination (3) seeds (4) fertilization
57. Respiratory structure in bacteria is
(1) mitochondria (2) ribosomes (3) mesosomes (4) lysosomes

- 58.** Bacteria do not need sunlight to grow because
- (1) they prepare their food without the help of light
 - (2) they do not like sunlight brightness
 - (3) due to absence of chlorophyll, they are incapable of manufacturing their own food
 - (4) they use other kinds of light for manufacturing their own food
- 59.** A free-living bacterium capable of fixing atmospheric nitrogen is
- (1) *Staphylococcus*
 - (2) *Streptococcus*
 - (3) *Azotobacter*
 - (4) *Nitrosomonas*
- 60.** Conformational variation between B and Z forms of DNA is partially due to
- (1) rotation of glycosidic bond
 - (2) loss of hydrogen bonds
 - (3) lack of hydrophobic attraction
 - (4) increase in humidity
- 61.** *Funaria* attaches to substratum through rhizoids which are
- (1) green, branched, thread like structures
 - (2) unbranched structures
 - (3) branched with oblique septa
 - (4) branched with plane septa
- 62.** Which plant has the largest sperm?
- (1) *Cycas*
 - (2) *Pinus*
 - (3) *Ephedra*
 - (4) *Gnetum*
- 63.** The translocation of sugars in angiosperms occurs in the form of
- (1) glucose
 - (2) fructose
 - (3) sucrose
 - (4) lactose

64. What is the function of tapetum in a developing anther?
- (1) To obtain food material from the microspores
 - (2) To digest the surplus microspores
 - (3) To provide food material to the developing microspores
 - (4) To give protection to the inner tissues
65. Bt toxin is coded by a gene named as
- (1) cry
 - (2) bty
 - (3) tby
 - (4) dty
66. Which among the following defines the section of the gene coding for unused pieces of RNA?
- (1) Intron
 - (2) Cistron
 - (3) Exon
 - (4) Transposon
67. Cyclic phosphorylation involves
- (1) PS I only
 - (2) PS II only
 - (3) either PS I or PS II
 - (4) both PS I and PS II
68. Two largest families of angiosperms are
- (1) Cucurbitaceae and Leguminosae
 - (2) Leguminosae and Orchidaceae
 - (3) Orchidaceae and Poaceae
 - (4) Poaceae and Cucurbitaceae
69. India has been identified as a megadiversity centre due to its significant species diversity. How many countries are recognised as megadiversity centres in addition to India?
- (1) 5
 - (2) 7
 - (3) 9
 - (4) 11

70. The number of neck canal cells in *Marchantia* is
(1) 4 (2) 6 (3) 8 (4) 10
71. Organisms belonging to different species living in a harmonious balance in an ecosystem constitute a
(1) community (2) population (3) biosphere (4) biome
72. Which of the following equations shows the relationship between gross primary productivity and net primary productivity?
(1) $GPP = NPP - \text{photosynthesis}$ (2) $GPP = NPP - \text{plant respiration}$
(3) $NPP = GPP - \text{plant respiration}$ (4) $NPP = GPP - \text{animal respiration}$
73. A group of organisms procuring their food in the same general way irrespective of their size are said to belong to
(1) same pyramid (2) different food webs
(3) same biogeochemical cycle (4) same trophical level
74. It is more accurate to define the biosphere as a global ecosystem than as a global community because the biosphere includes
(1) both abiotic and biotic components
(2) only biotic components
(3) only abiotic components
(4) environmental adaptations
75. Which of the following factors is most responsible for extinction of species in recent times?
(1) Pollution (2) Loss of habitat (3) Overhunting (4) Climate change

76. The best method to check soil erosion is
- (1) contour farming (2) gully reclamation
(3) wind breaks (4) vegetation soil cover
77. Characteristic feature of a physiologically dry soil is
- (1) concentration of salts is high in soil water
(2) soil is full of stones
(3) there is plenty of water in the soil
(4) light available to plants is insufficient
78. Tightly held water in a thin film by the soil particles is known as
- (1) rain water (2) gravitational water
(3) hygroscopic water (4) capillary water
79. Edaphic factors are related to
- (1) temperature (2) soil (3) man (4) animals
80. Which is the most stable ecosystem?
- (1) Mountain (2) Desert (3) Forest (4) Ocean
81. Maximum carbon dioxide fixation occurs through
- (1) phytoplankton (2) zooplankton
(3) fungi and bacteria (4) green plants

- 82.** Excessive discharge of fertilizers into water bodies results in
(1) silt (2) eutrophication
(3) death of hydrophytes (4) growth of fish
- 83.** Red rust of tea is caused by
(1) *Prototheca* (2) *Cephaleuros* (3) *Chlorococum* (4) *Chlorochytrium*
- 84.** Which of the following is true about oligotrophic lakes?
(1) Rich in nutrients (2) Poor in nutrients
(3) High productivity (4) Have algal blooms
- 85.** Which of the following is responsible for soil pollution?
(1) Crop rotation (2) Earthworms
(3) Organo-chlorines (4) Crop residues
- 86.** Distinct air bladders can be seen in the alga
(1) *Dictyota* (2) *Sargassum* (3) *Laminaria* (4) *Fucus*
- 87.** Group of nodal branches in *Batrachospermum* is known as
(1) globule (2) glomerule
(3) gonimoblast filaments (4) heterotrichous
- 88.** Gongrosira stage is found in
(1) an alga (2) a fungus (3) a bryophyte (4) a pteridophyte

89. Process of change from vegetative phase to reproductive phase in response to photoperiod is known as
- (1) photoperiodism (2) phototropism
(3) photophosphorylation (4) photosynthesis
90. The most abundant protein in the biosphere is
- (1) myosin
(2) carbonic anhydrase
(3) ribulose bisphosphate carboxylase-oxygenase
(4) collagen
91. The main culprit in producing photochemical smog is
- (1) SO_2 (2) NO_2 (3) CO (4) O_3
92. Synthesis of histone proteins during cell cycle takes place in
- (1) G_1 phase (2) S phase (3) G_2 phase (4) prophase
93. The evolution of any species can be considered a sum total of the specific adaptive changes preserved by
- (1) natural selection (2) isolation
(3) conservation (4) artificial selection
94. In a dihybrid cross with complementary genes, the F_2 ratio will be
- (1) 9:7 (2) 9:3:4 (3) 12:3:1 (4) 9:3:3:1

95. What is true for a fully turgid cell?

- (1) $OP = 0$ (2) $TP = 0$ (3) $OP = DPD$ (4) $DPD = 0$

96. Okazaki fragments are short DNA fragments synthesised in

- (1) 5'-3' direction in a leading strand
(2) 3'-5' direction in a leading strand
(3) 5'-3' direction in a lagging strand
(4) 3'-5' direction in a lagging strand

97. Krebs' cycle is called tricarboxylic acid cycle as it produces a tricarboxylic acid, namely

- (1) α -ketoglutaric acid (2) isocitric acid
(3) malic acid (4) oxaloacetic acid

98. Euchromatin differs from heterochromatin in having

- (1) ability to transcribe (2) dark staining
(3) more CG base pairs (4) densely packed chromatin

99. During transcription, the strand of DNA duplex which acts as template is also named as

- (1) sense strand (2) coding strand
(3) antisense strand (4) positive strand

100. Two types of flagella are present in which fungal phylum?

- (1) Oomycota (2) Basidiomycota
(3) Ascomycota (4) Myxomycota

101. *Aloe*, known for its medicinal properties, belongs to the family
- (1) Fabaceae (2) Solanaceae (3) Euphorbiaceae (4) Liliaceae
102. Ammonia is first oxidised to nitrite and then nitrite to nitrate with the help of two bacteria, which are respectively
- (1) *Nitrobacter*, *Nitrosomonas* (2) *Nitrobacter*, *Nitrococcus*
(3) *Nitrosomonas*, *Nitrobacter* (4) *Nitrococcus*, *Nitrosomonas*
103. Which one of the following nitrogen fixing microbes is anaerobic?
- (1) *Azotobacter* (2) *Anabaena* (3) *Beijemickia* (4) *Rhodospirillum*
104. Photosystem I and photosystem II are named like this on the basis of
- (1) the sequence in which they function during the light reaction
(2) the sequence of their discovery
(3) the wavelength at which the pigments absorb
(4) the size of two light harvesting complexes
105. Calvin used radioactive carbon and discovered that the first CO₂ fixation product was
- (1) 2-carbon organic acid (2) 3-carbon organic acid
(3) 5-carbon organic acid (4) 6-carbon organic acid
106. To make one molecule of glucose, how many turns of the Calvin cycle are required?
- (1) 1 (2) 2 (3) 4 (4) 6

107. Which of the following characters of plants is considered primitive?

- (1) Herbaceous (2) Absence of endosperm
(3) Compound leaves (4) Superior ovary

108. Replum is associated with the fruits of the family

- (1) Malvaceae (2) Solanaceae (3) Asteraceae (4) Brassicaceae

109. Which one is not a feature of C4 plants?

- (1) Optimum temperature 20-25 °C (2) Have Kranz anatomy in leaves
(3) Have no photorespiration (4) Chloroplasts have photosystem I

110. During cyclic photophosphorylation, which one of the following does not happen?

- (1) Electrons released from chlorophyll return back
(2) NADP is oxidised
(3) Photolysis of water does not occur
(4) Photophosphorylation takes place at two sites

111. Which one of the following mechanical means makes testa permeable to water?

- (1) Vernalization (2) Penetration (3) Stratification (4) Scarification

112. Coleoptile is a sheath like structure to cover

- (1) radicle (2) scutellum (3) coleorrhiza (4) plumule

113. Commercially useful bast fibres are derived from

- (1) pericycle (2) xylem (3) phloem (4) endodermis

114. The stele having one leaf gap is .
(1) eustele (2) solenostele (3) dictyostele (4) siphonostele
115. In *Funaria* moss, which of the following is gametophytic?
(1) Apophysis (2) Peristome (3) Operculum (4) Calyptra
116. In arithmetic growth, on plotting the length of the root against time, the curve obtained is
(1) sigmoid (2) linear (3) hyperbolic (4) parabolic
117. Which of the plant growth regulators was first isolated from human urine?
(1) Gibberellin (2) Cytokinin (3) Ethylene (4) Auxin
118. Which of the following is known as 'potato family' ?
(1) Fabaceae (2) Liliaceae (3) Solanaceae (4) Cucurbitaceae
119. The chief role of nucleolus in a nucleus concerns with
(1) organisation of chromosome (2) DNA replication
(3) ribosome synthesis (4) transcription
120. The amount of DNA in a cell at prophase II stage would be
(1) one fourth the parent cell (2) half the parent cell
(3) equal to the parent cell (4) double to the parent cell

121. A single turn of Krebs' cycle yields

- (1) 1 FADH₂, 4 NADH₂ and 1 GTP (2) 1 FADH₂, 3 NADH₂ and 1 GTP
(3) 1 FADH₂, 2 NADH₂ and 2 GTP (4) 2 FADH₂, 3 NADH₂ and 2 GTP

122. Which hormone promotes formation of female flowers in cucumbers, thus enhancing their yield?

- (1) Auxin (2) Gibberellins (3) Cytokinins (4) Ethylene

123. Which one is correct regarding inheritance of cob length in maize?

- (1) Multiple allele inheritance (2) Qualitative inheritance
(3) Quantitative inheritance (4) Extranuclear inheritance

124. Mendel was lucky in formulating the laws of inheritance because he selected

- (1) pea plant with short generation time as his experimental material
(2) one character at a time for his experiment
(3) different traits having genes on different chromosomes
(4) different traits each having two alternative forms

125. Experiments using heavy isotopes to confirm DNA as genetic material were carried out by

- (1) Watson and Crick (2) Hershey and Chase
(3) Meselson and Stahl (4) Griffith and Avery

126. The enzyme which transcribes 5S rRNA is

- (1) RNA polymerase I (2) RNA polymerase II
(3) RNA polymerase III (4) RNA polymerase

- 127.** Which one of the following is not a characteristic feature of a restriction endonuclease?
- (1) It cuts the DNA at specific sites
 - (2) It restricts the growth of some specific viruses in the bacteria
 - (3) It recognizes palindromic sequences
 - (4) It retains its activity for years at optimum temperature
- 128.** Which gene is constituent gene in lac operon?
- (1) Regulator gene
 - (2) Operator gene
 - (3) Promoter gene
 - (4) Structural gene
- 129.** The organisms which can tolerate wide temperature are called
- (1) ectothermal
 - (2) eurythermal
 - (3) endothermal
 - (4) stenothermal
- 130.** Two bacteria which are very useful in genetic engineering experiments are
- (1) *Nitrosomonas* and *Klebisella*
 - (2) *Escherichia* and *Agrobacterium*
 - (3) *Escherichia* and *Rhizobium*
 - (4) *Azotobacter* and *Diplococcus*
- 131.** Vertical distribution of different species occupying different levels in an ecosystem is called
- (1) stratification
 - (2) food chain
 - (3) succession
 - (4) trophic levels
- 132.** Biomagnification of which one of the following pollutants causes thinning of egg-shells and their premature breaking, thus resulting in a decline of bird population?
- (1) Mercury
 - (2) Cadmium
 - (3) DDT
 - (4) BHC

- 133.** The plant hormone produced by *Rhizobium* for nodulation is
(1) IAA (2) NAA (3) IBA (4) 2-4D
- 134.** Turpentine oil is obtained from
(1) *Pinus girardiana* (2) *Pinus roxburghii*
(3) *Pinus longifolia* (4) *Pinus excelsa*
- 135.** Gemma cups are found on
(1) male thallus of *Marchantia*
(2) female thallus of *Marchantia*
(3) prothallus of *Dryopteris*
(4) both female as well as male thallus of *Marchantia*
- 136.** Citrus Canker is caused by a
(1) Bacterium (2) Mycoplasma (3) Protist (4) Fungus
- 137.** Ribosomes of chloroplasts in mesophyll cells of leaves have two sub-units as
(1) 30S and 40S (2) 30S and 50S
(3) 40S and 50S (4) 40S and 60S
- 138.** Potato spindle tuber disease is caused by
(1) fungus (2) bacterium (3) viroid (4) virus
- 139.** Protonema is first stage of development in
(1) algae (2) fungi (3) liverworts (4) mosses

140. In angiosperms, one of the male gametes fuses with egg cell and the other fuses with
- (1) haploid primary nucleus (2) haploid secondary nucleus
(3) diploid secondary nucleus (4) triploid secondary nucleus
141. Which is the correct combination?
- (1) Monoadelphous in citrus (2) Diadelphous in pea
(3) Polyadelphous in China rose (4) Epipetalous in lily
142. Type of placentation in China rose is
- (1) parietal (2) axile (3) marginal (4) basal
143. Which one of the following has the correct sequence of the increasing organisational complexity?
- (1) Population, community, species, ecosystem
(2) Population, species, community, ecosystem
(3) Species, population, community, ecosystem
(4) Species, community, population, ecosystem
144. The transient population between two adjacent ecotypes is called
- (1) deme (2) hybrid (3) race (4) cline
145. Niche of a species in an ecosystem refers to its
- (1) function at its place of occurrence
(2) place of its occurrence
(3) competitive ability
(4) centre of origin

146. Eltonian Pyramid(s) that cannot be inverted is/are of
(1) biomass (2) number
(3) energy (4) biomass as well as energy
147. Keystone species in an ecosystem are those
(1) present in maximum number
(2) that are most frequent
(3) which attain a large biomass
(4) which contribute to ecosystem properties
148. A tobacco plant heterozygous for recessive character for albinism was self-pollinated and 1200 seeds were obtained. The numbers that retain parent genotype in these seedlings would be
(1) 300 (2) 600 (3) 900 (4) 1200
149. Sunken stomata and multiple epidermis are found in leaves of
(1) maize (2) *Nerium* (3) *Nilumbium* (4) Neem
150. Exposure of plants to high fluoride concentration results in necrosis or chlorosis which is characteristic in
(1) leaf tip and leaf margins (2) stem tip only
(3) petiole but not lamina of the leaf (4) only midrib of lamina

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ०एम०आर० उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।