

Question Booklet No. ....

(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) .....

**Code No. (495)**

Serial No. of OMR Answer Sheet .....

**(2016)**

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 OMR Answer Sheet)

1. Within 30 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 changes 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 marks).
  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.
- [ उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गये हैं । ]

Total No. of Printed Pages : 14



16P/219/22

No. of Questions : 150

Time : 2 Hours ]

[ Full Marks : 450

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

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

1. The cell wall of diatom cells is rich in :  
(1) Protein (2) Muramic acid (3) Silica (4) Galactoside
2. Iodine is commercially obtained from :  
(1) *Gelidium* (2) *Ulva* (3) *Gracilaria* (4) *Laminaria*
3. Which of the following classes of fungi shows highest degree of degeneration of sexuality ?  
(1) *Phycomyces* (2) Deutromycetes (3) Basidiomycetes (4) Ascomycetes
4. Which among the following is called peat moss ?  
(1) *Pellia* (2) *Sphagnum* (3) *Funaria* (4) *Porella*
5. Microsporangia and macrosporangia are formed in the same strobilus of :  
(1) *Selaginella* (2) *Dryopteris* (3) *Equisetum* (4) *Lycopodium*
6. Which one of the following algal pigments is soluble in water ?  
(1) Carotenoids (2) Fucoxanthin (3) Chlorophylls (4) Phycocyanin
7. Which of the following fungus is the main source of vitamins ?  
(1) Rust fungi (2) Yeast (3) Bread Mould (4) Smut fungi
8. Sporogonium of *Riccia* is differentiated into :  
(1) Seta and capsule (2) Foot, seta and capsule  
(3) A simple capsule (4) Foot and seta only
9. When sporangia in a fern develop from a single initial cell, it is called :  
(1) Leptosporangiate (2) Eusporangiate  
(3) Heterosporangiate (4) Asporangia
10. Which of the following algal thallus is considered as highly evolved ?  
(1) Simple filamentous (2) Colonial  
(3) Heterotrichous (4) Siphonaceous

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11. In which one of the following algae oogamous sexual reproduction is *not* found ?  
 (1) *Dictyota* (2) *Oedogonium* (3) *Chara* (4) *Zygnema*
12. Which of the following is a fungicide ?  
 (1) Bordeaux mixture (2) D. D. T.  
 (3) 2, 4-D (4) Amphicilin
13. Elaters are present in the sporogonium of :  
 (1) *Selaginella* (2) *Riccia* (3) *Marchantia* (4) *Sphagnum*
14. Amphiphloeic siphonostele is found in :  
 (1) *Ophioglossum* (2) *Marsilea* (3) *Pteris* (4) *Lycopodium*
15. Isomorphic alternation of generation is found in :  
 (1) *Fritschella* (2) *Vaucheria* (3) *Spirogyra* (4) *Volvox*
16. What is the mode of nutrition in Rhizopus ?  
 (1) Autotrophic (2) Parasitic (3) Symbiotic (4) Saprophytic
17. In which of the bryophyte a highest degree of sporogenous tissue sterilization is found ?  
 (1) *Funaria* (2) *Riccia* (3) *Anthoceros* (4) *Marchantia*
18. Gametic meiosis takes place in :  
 (1) *Polysiphonia* (2) *Ulothrix*  
 (3) *Sargassum* (4) *Draparnoldiopsis*
19. Which one of the following spores of Puccinia is haploid ?  
 (1) Uredospore (2) Teleutospore (3) Aeciospore (4) Basidiospore
20. Heterothallism in fungi was discovered by :  
 (1) Bessey (2) Robert Hooke (3) Saccardo (4) Blakeslee
21. In bryophytes reduction division takes place at the time of :  
 (1) Sex organ formation (2) Spore formation  
 (3) Gamete formation (4) Capsule formation
22. *Porphyra* is :  
 (1) A source of alginate (2) An edible alga  
 (3) Rich in fucoxanthin (4) A source of iodine
23. Potato famine in Ireland was caused by massive attack of the fungus :  
 (1) *Alternaria* (2) *Albugo* (3) *Phytophthora* (4) *Ustilago*
24. S. R. Kashyap is famous in the field of :  
 (1) Phycology (2) Bryology (3) Mycology (4) Pteridology
25. Which one of the following wavelengths of visible light is absorbed by phycoerythrin ?  
 (1) 420 nm (2) 610 nm (3) 660 nm (4) 540 nm

26. Ocheate stipules are found in :  
(1) *Citrus* (2) *Ixora* (3) *Polygonum* (4) *Ageratum*
27. Winged petioles are found in :  
(1) *Aegle* (2) *Argemone* (3) *Callistemon* (4) *Citrus*
28. Which of the following is partial root parasite ?  
(1) *Striga* (2) *Parthenium* (3) *Loranthus* (4) *Nepenthes*
29. Total number of series in Bentham and Hookers system of classification is :  
(1) 19 (2) 21 (3) 15 (4) 24
30. Ligulate leaves are found in :  
(1) Liliaceae (2) Zingiberaceae (3) Euphorbiaceae (4) *Cycas*
31. Flowers are unisexual in :  
(1) Zingiberaceae (2) Cyperaceae (3) Euphorbiaceae (4) Rutaceae
32. Floral bud is modified into tendril in :  
(1) *Antigonon* (2) *Pisum* (3) *Coccinia* (4) *Bignomia*
33. Which of the following is *not* true with respect to Asteraceae ?  
(1) Syngenesious stamens, inferior ovary and basal placentation  
(2) Monotheous anthers, superior ovary and axile placentation  
(3) Syngenesious stamens, cypsella fruits and superior ovary  
(4) Superior ovary, basal placentation and exstipulate leaves
34. Pentoxylon was discovered by Birbal Sahni from :  
(1) Nilgiri Hills (2) Rajmahal Hills (3) Western Ghats (4) Satpura Hills
35. *Cycas* ovule is :  
(1) Campylotropous (2) Hemianatropous  
(3) Orthotropous (4) Anatropous
36. Birbal Sahni Institute of Palaeobotany is situated at :  
(1) New Delhi (2) Lucknow (3) Dehradun (4) Bhubaneswar
37. *Stevia rebaudiana* a natural sweetner plant, belongs to family :  
(1) Asteraceae (2) Solanaceae (3) Poaceae (4) Apiaceae
38. Branched stamens are found in :  
(1) *Triticum aestivum* (2) *Calotropis procera*  
(3) *Ricinus communis* (4) *Solanum nigrum*
39. Which type of embryo sac is found in *Allium* ?  
(1) Monosporic type (2) Bisporic type  
(3) Tetrasporic type (4) Polygonum type
40. In angiosperms, embryo sac represents :  
(1) Megagametophyte (2) Megasporophyte  
(3) Megagamete (4) megaspore

(3)

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41. Cortical vascular bundles are found in :  
 (1) *Salvadora* (2) *Achyranthes* (3) *Nyctanthes* (4) *Boerhavia*
42. Perisperm in the seeds develops from :  
 (1) Nucellus (2) Funiculus (3) Hilum (4) Ovary wall
43. Pollination through lever mechanism takes place in :  
 (1) *Calotropis* (2) *Salvia* (3) *Ficus* (4) *Hydrilla*
44. Sunken stomata are found in :  
 (1) *Pinus* needles (2) *Cycas* leaves  
 (3) *Gnetum* leaves (4) *Cycas* corolloid roots
45. Trimerous flowers, superior ovary and axile placentation is found in :  
 (1) Solanaceae (2) Liliaceae (3) Cucurbitaceae (4) Asteraceae
46. Tricarpellary, syncarpous and inferior ovary is found in :  
 (1) Asteraceae (2) Cucurbitaceae (3) Liliaceae (4) Poaceae
47. Winged seeds are found in :  
 (1) *Pinus* (2) *Cycas* (3) *Papaver* (4) *Adhatoda*
48. Parachute mechanism of seed dispersal is due to :  
 (1) Bracts (2) Pappus (3) Tepals (4) Thorns
49. The endosperm of *Pinus* is :  
 (1) Triploid (2) Haploid (3) Diploid (4) Tetraploid
50. Gynobasic style is found in the family :  
 (1) Ranunculaceae (2) Papaveraceae (3) Apiaceae (4) Lamiaceae
51. "Rate of change of number of species per unit change in habitat" is known as :  
 (1) Alpha diversity (2) Beta diversity (3) Gamma diversity (4) Biodiversity
52. Which of the following has been recognized as a mega diverse country ?  
 (1) New Zealand (2) Austria (3) Australia (4) Nepal
53. Taiga represents :  
 (1) Northern coniferous forests (2) Temperate grassland  
 (3) Temperate deciduous forests (4) Savannah grassland
54. Which of the following is submerged hydrophyte ?  
 (1) *Eichhornia* (2) *Azolla* (3) *Vallisneria* (4) *Lemna*
55. In India maximum biodiversity is found in :  
 (1) Gangetic plain (2) Western Ghats  
 (3) Trans-Himalayan region (4) Eastern Ghats
56. The term "stenoneous" is used to refer :  
 (1) Narrow range of temperature tolerance  
 (2) Wide range of salinity tolerance  
 (3) Narrow range of food selection  
 (4) Narrow range of habitat selection (4)



57. Which of the following causes the Itai Itai disease ?  
(1) Hg (2) Cr (3) Pb (4) Cd
58. The average salinity of sea water is :  
(1) 35% (2) 3.5% (3) 5.3% (4) 0.35%
59. The term "aufwuchs" is used to refer :  
(1) Plankton (2) Nekton (3) Neuston (4) Periphyton
60. Which one of the following is a water borne disease ?  
(1) Small pox (2) Cholera (3) Malaria (4) Tuberculosis
61. Marginal necrosis and tip-burn in leaves is a diagnostic symptom of :  
(1) SO<sub>2</sub> toxicity (2) NO<sub>2</sub> toxicity  
(3) Ozone toxicity (4) Fluoride toxicity
62. In PM<sub>2.5</sub> suffix 2.5 refers to :  
(1) Size of particulate matter in micron  
(2) 2.5 fold higher toxicity of particulate matter  
(3) Threshold limit of toxicity of particulate matter  
(4) Effective concentration of particulate matter
63. The process of podsolization generally occurs in :  
(1) Cold humid climate (2) Cold dry climate  
(3) Dry tropical climate (4) Tropical rain forests
64. Which of the following form of soil water is most commonly available for plant growth ?  
(1) Hygroscopic water (2) Gravitational water  
(3) Capillary water (4) Ehard water
65. In an ecological succession "the process by which the migrants establish themselves in the new place" is known as :  
(1) Nudation (2) Migration (3) Ececis (4) Aggregation
66. Climax stage is predominantly characterized by :  
(1) High entropy  
(2) K-selection type species  
(3) Species with broad niche specialization  
(4) Open nutrient cycle
67. Which of the following pair is *correctly* matched ?  
(1) Sulphur dioxide - Teeth  
(2) Fluoride pollution - Bhopal gas tragedy  
(3) Methyl isocyanate - Acid rain  
(4) Ozone depletion - Skin cancer

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68. J-shaped population growth curve is *not* found in :  
 (1) House fly (2) Cassia tora  
 (3) Elephant (4) r-selection type species
69. The total energy trapped by plants in a given time and space is known as :  
 (1) Gross primary productivity (2) Net primary productivity  
 (3) Ecological efficiency (4) Turnover rate
70. Which of the following is the most common pattern of population dispersion ?  
 (1) Random (2) Contagious (3) Regular (4) Uniform
71. Acid rain has pH :  
 (1) <7.6 (2) <7.0 (3) <5.6 (4) <1.6
72. The "continuum" concept of vegetation organization is also known as :  
 (1) Individualistic approach (2) Zonal approach  
 (3) Typal approach (4) Organismic approach
73. For narrow leaves, the value of Kemp's constant is :  
 (1) 0.6 (2) 0.9 (3) 6.0 (4) 9.0
74. Which National Park is situated in Uttar Pradesh ?  
 (1) Jim Corbett National Park (2) Dudhwa National Park  
 (3) Gir National Park (4) Kaziranga National Park
75. In a water body, algal bloom is an indicator of :  
 (1) Nutrient enrichment (2) Oligotrophic condition  
 (3) Pollution due to pesticides (4) Pollution due to metals
76. A plant growth regulator related to inhibition of senescence is :  
 (1) Ethylene (2) Abscissic acid  
 (3) Jasmonic acid (4) Gibberellic acid
77. Function of leg haemoglobin in root nodules of leguminous plant is :  
 (1) To prevent respiratory  $O_2$  uptake (2) To induce ATP synthesis  
 (3) To transfer electrons to  $N_2$  (4) To remove  $O_2$
78. Diffusion pressure deficit of a fully turgid cell is equal to :  
 (1) Zero  
 (2) Turgor pressure of cell  
 (3) Osmotic pressure of cell  
 (4) Product of turgor and osmotic pressures of the cell
79. Which of the following group of codons is meant for the termination of synthesis of polypeptide chain ?  
 (1) AUA, GAU, UGA (2) AAU, GAU, GUA  
 (3) AUA, AGU, UAA (4) UAA, UAC, UGA

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80. The technique and experimental organism used by Calvin for 'Calvin Cycle' were :  
 (1) X-ray technique and *Chlamydomonas*  
 (2) Radioactive isotope technique and *Volvox*  
 (3) Radioactive isotope technique and *Chlorella*  
 (4) Nuclear magnetic resonance technique and *Spirogyra*
81. A pigment concerned with both floral induction and seed germination is :  
 (1) Florigen (2) Chlorophyll (3) Plastocyanin (4) Phytochrome
82. The bacterial genera carrying out nitrification, nitrification, symbiotic and symbiotic nitrogen fixation, respectively are :  
 (1) *Rhizobium*, *Azotobacter*, *Nitrosomonas* and *Nitrobacter*  
 (2) *Nitrosomonas*, *Nitrobacter*, *Rhizobium* and *Azotobacter*  
 (3) *Nitrosomonas*, *Nitrobacter*, *Azotobacter* and *Rhizobium*  
 (4) *Nitrobacter*, *Nitrosomonas*, *Azotobacter* and *Rhizobium*
83. The organic acid which plays a key role in the synthesis amino acid is :  
 (1) Pyruvic acid (2) Malic acid  
 (3)  $\alpha$ -Ketoglutaric acid (4) Oxaloacetic acid
84. The terms 'apoplast' and 'symplast' were used for the first time by :  
 (1) Dixon (2) Clark (3) Munch (4) Fisher
85. In split genes, the coding sequence is called :  
 (1) Sistrans (2) Operons (3) Exons (4) Introns
86. Which of the following molecule has both  $\alpha$  1-4 and  $\alpha$  1-6 linkages ?  
 (1) Maltose (2) Cellulose (3) Amylose (4) Amylopectin
87. The pathway that converts fat to carbohydrate is :  
 (1) Calvin pathway (2) Glyoxylate pathway  
 (3)  $C_4$  pathway (4) Glycolate pathway
88. Which of the following plant is an example of short day plant ?  
 (1) *Mirabilis jalapa* (2) *Beta vulgaris*  
 (3) *Xanthium strumarium* (4) *Lycopersicum esculentum*
89. Which of the following nutrient elements is most mobile in plants ?  
 (1) Phosphorus (2) Potassium (3) Calcium (4) Magnesium
90. Which of the following enzyme is a mitochondrial marker enzyme ?  
 (1) Aldolase (2) Amylase  
 (3) Succinic dehydrogenase (4) Pyruvate dehydrogenase
91. In chloroplast, 'ATP synthase' is located in :  
 (1) Inner membrane (2) Outer membrane  
 (3) Thylakoid membrane (4) Grana

92. During EMP pathway, The ATP is produced through :  
 (1) Oxidative phosphorylation (2) Cyclic phosphorylation  
 (3) Sustrate level phosphorylation (4) Photophosphorylation
93. Which of the following pigment is soluble in water ?  
 (1) Carotenoids (2) Chlorophylls (3) Phycocyanin (4) Xanthophylls
94. Aptamers are :  
 (1) RNA molecules (2) DNA (3) Protein (4) Amino acids
95. In photosynthetic electron transport, the herbicides like DCMU and dimethyl urea inhibit electron transport between :  
 (1)  $P_{680}$  and Ubiquinone (2) Cytochrome *f* and Plastocyanin  
 (3) Plastoquinone and Cytochrome *f* (4) Ubiquinone and Plastoquinone
96. Which of the following enzymes initiates DNA replication ?  
 (1) DNA polymerase I (2) DNA polymerase II  
 (3) DNA polymerase III (4) RNA polymerase
97. The peptidyl transferase enzyme is an integral part of which unit of the ribosome :  
 (1) 30S (2) 70S (3) 50S (4) A site of 30S
98. Cellulose is polymer of :  
 (1)  $\alpha$ -1 -Glucose (2)  $\beta$ -D -Glucose (3)  $\alpha$ -D -Glucose (4)  $\beta$ -L -Glucose
99. Glutathione is a :  
 (1) Dipeptide (2) Tripeptide  
 (3) Monosaccharide (4) Disaccharide
100. Ethylene is produced from amino acid :  
 (1) Methionine (2) Tryptophan (3) Tyrosine (4) Serine
101. A mutant of *E-coli* grows normally on glucose or on glycerol but not on acetate. The most likely metabolic pathway that is defective in this mutant is :  
 (1) Glyoxalate cycle (2) Hexose monophosphate shunt  
 (3) Krebs cycle (4) Enter-Duodoroff pathway
102. Under which phase of bacterial growth bacteria increases in size but do not divide ?  
 (1) Lag (2) Log (3) Stationary (4) Death phase
103. All the following may be methods for the inhibition of microbial growth by antibiotics except:  
 (1) Antibiotics disrupt cell wall synthesis  
 (2) Antibiotics interfere with cell membrane function  
 (3) Antibiotics prevent the release of energy from ATP  
 (4) Antibiotics inhibit the synthesis of protein

104. A bacterial culture contained  $32 \times 10^6$  cells after 2.5 hours of exponential growth. If the doubling time was 30 min, what was the initial population number in this culture ?  
 (1)  $20 \times 10^4$  cells (2)  $10 \times 10^5$  cells (3)  $40 \times 10^5$  cells (4)  $16 \times 10^6$  cells
105. Genome of HIV is :  
 (1) ss DNA (2) ss RNA (3) ds DNA (4) ds RNA
106. A T-series bacteriophage can be recognized by its :  
 (1) Tadpole shape (2) Rounded shape  
 (3) Irregular shape (4) Rhomboidal shape
107. Bacteriophage that lyse the bacterial cell shortly after infection are termed as :  
 (1) Systemic (2) Virulent (3) Immune (4) Temperate
108. Endosymbiotic evolution is supposed to be occurred for :  
 (1) Chloroplast (2) Mitochondria  
 (3) Golgibodies (4) Both chloroplast and mitochondria
109. Bacteroids is a special form of bacteria involved in :  
 (1) Photosynthesis (2) Nitrogen fixation  
 (3) Respiration (4) Photorespiration
110. Which of the following is/are *correct* about *Azotobacter* ?  
 A. It is free living nitrogen fixing bacteria  
 B. It is a symbiotic nitrogen fixing bacteria  
 C. It is obligate aerobe  
 D. It is obligate anaerobe  
 (1) A and C (2) A and D (3) Only C (4) Only B
111. No. of binding sites for  $O_2$  molecules in a single leghaemoglobin molecule :  
 (1) 1 (2) 2 (3) 3 (4) 4
112. The final stage of alcohol production is known as :  
 (1) Fermentation (2) Refinement (3) Proofing (4) Distillation
113. The intoxicating substance in beer, wine and liquor is.  
 (1) Ethanol (2) Phenol (3) Isopropyl alcohol (4) Methanol
114. The first known antibiotic is :  
 (1) Chloramphenicol (2) Kanamycin (3) Penicillin-C (4) Penicillin-F
115. Best medium for production of penicillin is :  
 (1) Nutrient agar (2) Corn steep liq  
 (3) Sulfite waste liquor (4) Whey
116. In industrial production of streptomycin the secondary by-product is :  
 (1) Vitamin 12 (2) Vitamin C (3) Vitamin 6 (4) 'abolite or

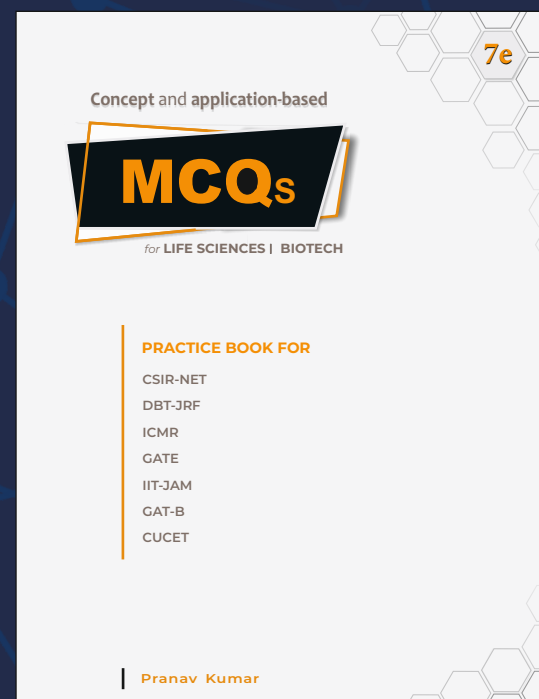
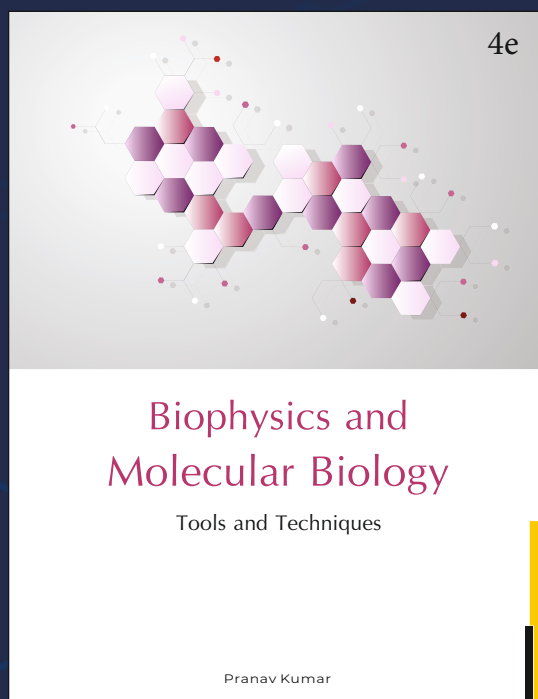
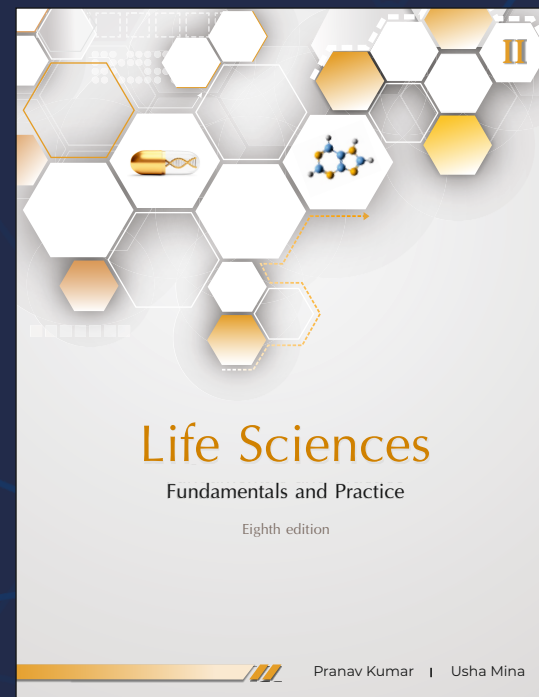
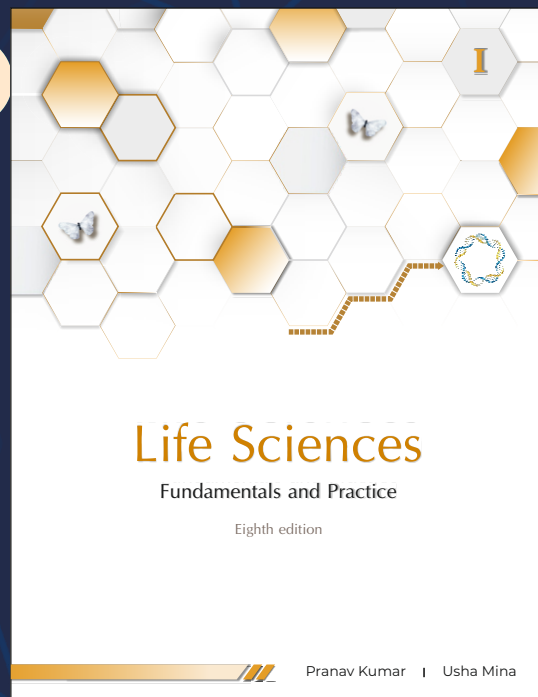


117. The name 'Smut diseases' is given to those produced by *Ustilago* because :  
 (1) Its mycelium is black in colour  
 (2) It parasitizes cereals  
 (3) The host becomes completely black  
 (4) The fungus produces black sooty spore masses
118. 'Target board effect' is caused by :  
 (1) *Alternaria* (2) *Colletotrichum* (3) *Pyricularia* (4) *Helminthosporium*
119. Plant disease 'Papaya mosaic' is caused by :  
 (1) Bacteria (2) Virus (3) Fungi (4) Mycoplasma
120. Heterothallism means :  
 (1) Fusion of thalli of same strain (2) Fusion of thalli of different strain  
 (3) Formation of zygospore (4) Formation of conidia
121. Which disease in plants is caused by bacteria ?  
 (1) 'Die-back' in citrus (2) 'Tikka' in groundnut  
 (3) 'Leaf curl' in tomato (4) 'Stem rot' in maize
122. A condition of overgrowth or excessive development of an organ or its parts usually due to infection by a pathogen is :  
 (1) Hypotrophy (2) Atrophy (3) Hyperplasia (4) Hypertrophy
123. The fungicide 'Bordeaux mixture' was discovered by :  
 (1) H. Martin (2) A. Millardet  
 (3) C. A. Peterson (4) S. D. Garrett
124. Phytoalexins are formed in plants :  
 (1) After fungal infection (2) Before fungal infection  
 (3) On fungal contact with plant (4) All of the above
125. Of the following, the fungicide that is systemic is :  
 (1) Bavistin (2) Blue-copper-50 (3) Indofil-45 (4) Sulfex
126. The latest model that is proposed to explain the structure of plasma membrane :  
 (1) Unit membrane model (2) Fluid mosaic model  
 (3) Artificial model system (4) Thin lipid layer concept
127. In which of the following stages of cell division the DNA content is doubled ?  
 (1) Prophase (2) Interphase (3) Metaphase (4) Telophase
128. The sequence of all cell cycle :  
 (1)  $G_1, S, G_2, M$  (2)  $G_1, S, G_2, M$  (3)  $S, G_1, M, G_2$  (4)  $M, G_1, G_2, S$
129. Replacement of a pyrimidine nucleotide by a purine nucleotide is known as :  
 (1) Transition mutation (2) Frame shift mutation  
 (3) Trans mutation (4) Transition mutation

130. Turner's syndrome is due to :  
(1) Monosomic chromosome (2) Trisomic chromosome  
(3) Polysomic chromosome (4) Bisomic chromosome
131. Allosomes are :  
(1) Rounded bodies (2) Type of protein  
(3) Sex chromosome (4) Node like structure on-chromosome
132. The cross of *f*<sub>1</sub> hybrid with either its dominant or recessive parent is known as :  
(1) Test cross (2) Back cross  
(3) Reverse cross (4) Polygenic inheritance
133. Which is the characteristics of Euchromatin ?  
(1) Small (2) Light stained  
(3) Tightly packed (4) Inactive in transcription
134. Which one of the following is alkylating agent ?  
(1) 5-Bromo uracil (2) 5-chloro uracil  
(3) Hydrazine (4) Ethylethane sulphonate
135. Which histone is known as linker histone ?  
(1)  $H_1$  (2)  $H_{2A}$  (3)  $H_3$  (4)  $H_4$
136. Which statement is *incorrect* ?  
(1) The genetic maps of chromosomes are based on the average number of *crossovers* that occur during meiosis.  
(2) Genetic map distances are estimated by calculating the frequency of recombination between genes in experimental crosses.  
(3) For small map intervals (<20 cM), the map distance equal the frequency of a single crossover in the interval.  
(4) The expected frequency of double crossovers is calculated on the *assumption* that the two crossover occur dependently.
137. Anastral mitosis is characteristics of :  
(1) All living organism (2) Higher plants  
(3) Lower animals (4) Higher animals
138. The phenomenon of masking the expression of a gene by another non allelic gene is known as :  
(1) Mutation (2) Epistasis (3) Heterosis (4) Dominance
139. Bar eye in *Drosophila* is due to :  
(1) Duplication (2) Deficiency (3) Inversion (4) Translocation
140. The phenomenon of heterosis is :  
(1) Structural hybridity (2) Hybrid serility  
(3) Hybrid incompatibility (4) Hybrid vigour

141. Cytoplasmic male sterility is inherited :  
(1) Paternally (2) Maternally  
(3) Bacteriophage multiplication (4) Paternally and Maternally both
142. A gene which synthesizes a repressor protein is known as :  
(1) Regulator gene (2) Operator gene  
(3) Promoter gene (4) CAP
143. Which of the following is **not** related with karyotype ?  
(1) Number of chromosome (2) Size of chromosome  
(3) Chemical nature of chromosome (4) Shape of chromosome
144. Who wrote the famous book 'Origin of Species' ?  
(1) Lamarck (2) Charles Darwin  
(3) De Vries (4) Mendel
145. XX-XO type of sex determination is found in :  
(1) Hen (2) Cock (3) Grasshopper (4) *Rumex sp.*
146. The most important use of haploids in the production of :  
(1) Homozygous diploids (2) Heterozygous diploids  
(3) Amphidiploids (4) Segmental allopolyploids
147. *Raphanobrassica* is an example of :  
(1) Haploid (2) Diploid  
(3) Autopolyploid (4) Allopolyploid
148. Which statement is **incorrect** for multiple allelism ?  
(1) Eye colour in *Drosophila* is an example of multiple allelism.  
(2) ABO blood groups in humans is due to multiple allelism.  
(3) It follows Mendel's concept of inheritance.  
(4) Skin colour in rodents may be explained by multiple allelism concept.
149. Meiosis involves :  
(1) One division of nucleus and one division of chromosome  
(2) Two division of nucleus and one division of chromosome  
(3) One division of nucleus and two division of chromosome  
(4) Two division of nucleus and two division of chromosome
150. Which one of the following is **not** characteristics of monohybrid cross ?  
(1) It is a cross between two pure organism in order to study the inheritance of a single pair of alleles.  
(2) Phenotypic ratio in  $f_1$  generation is 9 : 3 : 3 : 1.  
(3) It produces genotypic ratio of 1 : 2 : 1 in  $f_2$  generation.  
(4) It studies the inheritance of a single trait.





# MSc

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## अभ्यर्थियों के लिए निर्देश

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(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा ओ०एम०आर० उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली/काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 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 संख्या और ओ० एम० आर० पत्र संख्या 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 बाल-प्वाइंट 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. रफ कार्य के लिये इस पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा अंतिम खाली पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ० एम० आर० उत्तर-पत्र ही परीक्षा भवन में जमा करें।
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 हो/होगी।