

Y

AF 2013

PAPER - III (BIOLOGICAL SCIENCES)

प्रश्न पत्र - III (जैव विज्ञान)

Test Form No.

टेस्ट फॉर्म सं.

010 KP 0

Time Allowed : 2 Hours (For VH Candidates : 2 hr. 40 min.)

निर्धारित समय : 2 घंटे (दृष्टिबाधित उम्मीदवारों के लिए : 2 घंटे 40 मिनट)

Maximum Marks : 200

अधिकतम अंक : 200

Read the following instructions carefully before you begin to answer the questions. This booklet contains questions in English as well as in Hindi.

प्रश्नों के उत्तर देने से पहले नीचे लिखे अनुदेशों को ध्यान से पढ़ लें। इस पुस्तिका में प्रश्न अंग्रेजी तथा हिन्दी दोनों में दिये गये हैं।

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains 200 questions.
2. In questions set bilingually in English and Hindi, in case of discrepancy, the English version will prevail.
3. All questions are compulsory and carry equal marks.
4. The paper carries negative marking. 0.25 mark will be deducted for each wrong answer.
5. Before you start to answer the questions you must check up this Booklet and ensure that it contains all the pages (1-32) and see that no page is missing or repeated. If you find any defect in this Booklet, you must get it replaced immediately.
6. You will be supplied the Answer-Sheet separately by the Invigilator. You must complete and code the details of Name, Roll Number, Ticket Number and Test Form Number on Side-I of the Answer-Sheet carefully. You must also put your signature and Left-Hand thumb impression on the Answer-Sheet at the prescribed place before you actually start answering the questions. These instructions must be fully complied with, failing which, your Answer-Sheet will not be evaluated and you will be awarded 'ZERO' mark. (VH candidates will have to ensure that these details are filled in by the scribe. However all VH candidates must put their left-hand thumb impression at the space provided in the Answer-Sheet. Those VH candidates who can sign should also put their signatures in addition to thumb impression.)
7. Answers must be shown by completely blackening the corresponding ovals on Side-II of the Answer-Sheet against the relevant question number by Black/Blue Ball-point Pen only. Answers which are not shown by Black/Blue Ball-Point Pen will not be awarded any mark.
8. A machine will read the coded information in the OMR Answer-Sheet. In case the information is incomplete or different from the information given in the application form, such candidate will be awarded 'zero' mark.
9. The Answer-Sheet must be handed over to the Invigilator before you leave the Examination Hall.
10. Failure to comply with any of the above instructions will render a candidate liable to such action/penalty as may be deemed fit.
11. The manner in which the different questions are to be answered has been explained at the back of this Booklet (Page No. 32), which you should read carefully before actually answering the questions.
12. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any question.
13. No rough work is to be done on the Answer-Sheet. Space for rough work has been provided below the questions.
14. "Mobile phones and wireless communication devices are completely banned in the examination halls/rooms. Candidates are advised not to keep mobile phones/any other wireless communication devices with them even switching it off, in their own interest. Failing to comply with this provision will be considered as using unfair means in the examination and action will be taken against them including cancellation of their candidature."

उम्मीदवारों के लिए अनुदेश

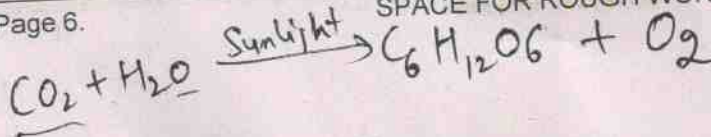
1. इस पुस्तिका में कुल 200 प्रश्न हैं।
2. अंग्रेजी और हिन्दी भाषा में तैयार किए गए द्विभाषी प्रश्नों में कोई विसंगति होने की स्थिति में अंग्रेजी विवरण मान्य होगा।
3. सभी प्रश्न अनिवार्य हैं तथा सबके बराबर अंक हैं।
4. प्रश्न पत्र में नकारात्मक अंकन होगा। हर गलत उत्तर के लिए 0.25 अंक काटा जाएगा।
5. प्रश्नों के उत्तर देने से पहले आप इस पुस्तिका की जाँच करके देख लें कि इसमें पूरे पृष्ठ (1-32) हैं तथा कोई पृष्ठ कम या दुबारा तो नहीं आ गया है। यदि आप इस पुस्तिका में कोई त्रुटि पाएँ, तो तत्काल इसके बदले दूसरी पुस्तिका ले लें।
6. निरीक्षक द्वारा आपको उत्तर-पत्रिका अलग से दी जाएगी। उत्तर-पत्रिका के Side-I में ध्यानपूर्वक अपना नाम, रोल नम्बर, टिकट नम्बर और टेस्ट फॉर्म संख्या अवश्य लिखें। प्रश्नों के उत्तर वास्तव में शुरू करने से पहले उत्तर-पत्रिका पर निर्धारित स्थान में आप अपने हस्ताक्षर एवं बाएँ हाथ के अंगूठे का निशान भी अवश्य लगाएँ। उपर्युक्त अनुदेशों का पूरी तरह अनुपालन किया जाए, अन्यथा आपकी उत्तर-पत्रिका को जाँचा नहीं जाएगा और 'शून्य' अंक दिया जाएगा। (दृष्टिबाधित उम्मीदवार सुनिश्चित करें कि यह विवरण लिपिक द्वारा भरा जाए। परन्तु सभी दृष्टिबाधित उम्मीदवार उत्तर-पत्रिका में निर्धारित स्थान पर अपने बाएँ हाथ के अंगूठे का निशान अवश्य लगाएँ। जो दृष्टिबाधित उम्मीदवार हस्ताक्षर कर सकते हैं, वे अंगूठे के निशान के अलावा अपने हस्ताक्षर भी कर दें।)
7. उत्तर-पत्रिका में सभी उत्तर Side-II में प्रश्न संख्या के सामने दिये गये सम्बन्धित अण्डाकार खानों को केवल काला/नीला बॉल-पॉइंट पेन से पूरी तरह काला करके दिखाएँ। जो अण्डाकार खाने काला/नीला बॉल-पॉइंट पेन से नहीं भरे जाएँगे, उनके लिए कोई अंक नहीं दिया जाएगा।
8. ओ.एम.आर. उत्तर-पत्रिका में भरी गई कूट सूचना को एक मशीन पढ़ेगी। यदि सूचना अपूर्ण है अथवा आवेदन प्रपत्र में दी गई सूचना से भिन्न है, तो ऐसे अभ्यर्थी को 'शून्य' अंक दिया जाएगा।
9. परीक्षा-भवन छोड़ने से पहले परीक्षार्थी को उत्तर-पत्रिका निरीक्षक के हवाले कर देनी चाहिए।
10. ऊपर के अनुदेशों में से किसी एक का भी पालन न करने पर उम्मीदवार पर विवेकानुसार कार्यवाही की जा सकती है या दण्ड दिया जा सकता है।
11. विभिन्न प्रश्नों के उत्तर देने की विधि इस पुस्तिका के पीछे (पृष्ठ संख्या 32) में छपे हुए निर्देशों में दे दी गई है, इसे आप प्रश्नों के उत्तर देने से पहले ध्यानपूर्वक पढ़ लें।
12. प्रश्नों के उत्तर जितनी जल्दी हो सके तथा ध्यानपूर्वक दें। कुछ प्रश्न आसान तथा कुछ कठिन हैं। किसी एक प्रश्न पर बहुत अधिक समय न लगाएँ।
13. कोई रफ़ कार्य उत्तर-पत्रिका पर नहीं करना है। रफ़ कार्य के लिए स्थान प्रश्नों के नीचे दिया गया है।
14. "परीक्षा हॉल/कमरों में मोबाइल फोन तथा बेतार संचार साधन पूरी तरह निषिद्ध हैं। प्रत्याशियों को उनके अपने हित में सलाह दी जाती है कि मोबाइल फोन/किसी अन्य बेतार संचार साधन को स्विच ऑफ़ करके भी अपने पास न रखें। इस प्रावधान का अनुपालन न करने को परीक्षा में अनुचित उपायों का प्रयोग माना जाएगा और उनके विरुद्ध कार्रवाई की जाएगी, उनकी अभ्यर्थिता रद्द कर देने सहित।"

SEAL

1. Left handed DNA is known as
(A) m-DNA (B) Z-DNA
(C) R-DNA (D) B-DNA
2. DNA was first discovered by
(A) Watson and Crick
(B) Friedrich Miescher
(C) Kornberg and Nirenberg
(D) Beadle and Tatum
3. Wilting of plant occurs when
(A) Xylem is blocked
(B) Lateral roots are removed
(C) Cortex is injured
(D) Phloem is blocked
4. The term "Hydroponics" means
(A) Airless cultivation
(B) Soilless cultivation
(C) Growing of plants in pots
(D) Growing of aquatic plants
5. Enzymes functional inside the cell are called
(A) Exoenzymes (B) Apoenzymes
(C) Isoenzymes (D) Endoenzymes
6. The planktonic forms of plants are normally
(A) Heterotrophs (B) Chemotrophs
(C) Insectivorous type (D) Autotrophs
7. Mulching is a process that helps mainly in
(A) Soil drainage
(B) Improvement of soil
(C) Moisture conservation
(D) Weed control
8. When huge amount of sewage is dumped into the river, the BOD value will be
(A) Decreased
(B) Increased
(C) Slightly decreased
(D) Unchanged
9. Growing trees along with agricultural crops is known as
(A) Agroforestry (B) Silviculture
(C) Horticulture (D) Social forestry
10. *Bacillus thuringiensis* is commercially useful as
(A) Bio-fertilizer
(B) Bio-fungicide
(C) Bio-weedicide
(D) Bio-insecticide
11. Fruit developing from a complete inflorescence is known as
(A) composite fruit
(B) aggregate fruit
(C) true simple fruit
(D) false fruit
12. The reserve food in albuminous seeds is stored in
(A) endosperm
(B) testa
(C) plumule
(D) cotyledons
13. Who discovered and coined the term 'Cell' ?
(A) Robert Hooke
(B) Anton van Leeuwenhoek
(C) Theodore Schwann
(D) Joseph Lister
14. The type of forests in which Teak plants grow is
(A) scrub jungle (B) alpine
(C) deciduous (D) evergreen
15. Removal of stamens before they shed their pollens is called
(A) electroporation
(B) encapsulation
(C) eutrophication
(D) emasculation
16. IRRI is the abbreviation for
(A) International Rice Research Institute
(B) International Raw Rice Institute
(C) Institute of Rice Research in India
(D) Indian Rice Research Institute

17. The process of cultivating wild species to suit human needs is called
(A) domestication
(B) hybridization
(C) acclimatization
(D) selection
18. Chloroplasts are absent in
(A) algae (B) fungi
(C) pteridophytes (D) bryophytes
19. 'Stem cells' used in tissue engineering are
(A) cells that develop stem
(B) cells that proliferate
(C) cells capable of transformation
(D) derived from stems
20. TMV was first crystallised by
(A) Stanley (B) Sanger
(C) Luria (D) Miller
21. DNA directs protein synthesis through
(A) transfer RNA
(B) ribosomal RNA
(C) soluble RNA
(D) messenger RNA
22. In *Drosophila*, male fertility genes are present in
(A) X - Y-chromosomes
(B) Y-chromosome
(C) Autosome
(D) X-chromosome
23. The number of autosomes in human beings is
(A) 23 (B) 44
(C) 46 (D) 22
24. The book 'Secret Life of Plants' was written by
(A) Webster (B) Linnaeus
(C) Bauhin (D) Aristotle
25. The living fossil tree is
(A) *Pinus* (B) *Gnetum*
(C) *Ginkgo* (D) *Cocos*
26. The botanical name of amla is
(A) *Phyllanthus niruri*
(B) *Musa paradisiaca*
(C) *Tamarindus indica*
(D) *Embllica officinalis*
27. Fog is a colloid of
(A) Liquid in gas (B) Solid in gas
(C) Liquid in liquid (D) Gas in liquid
28. 'Touch me not' plant exhibits a reflex action that is due to
(A) powerful water pressure alteration
(B) special knee joint
(C) sudden temperature control
(D) exceptional nervous conduction
29. 'Tension wood' is the name given to that wood which reacts to
(A) disease
(B) drought
(C) low oxygen
(D) drooping
30. Zygomorphic pattern of flower has an advantage over actinomorphic pattern by rendering
(A) confusion to predators
(B) minimizing production cost
(C) easy mechanism for opening and closing
(D) proper orientation to pollinator
31. Pneumatophores of mangrove plants are a kind of roots for better
(A) desalination (B) breathing
(C) absorption (D) anchorage
32. Pyrenoid is a substance found in
(A) Mitochondria
(B) Chloroplast
(C) Golgi body
(D) Nucleus
33. Multicoloured furry and cottony contaminants of stale bread are due to
(A) yeasts (B) fungi
(C) viruses (D) bacteria

34. Which one of the following substances release seeds from their dormant state ?
 (A) Auxin
 (B) Ethylene
 (C) Gibberellin
 (D) Cytokinin
35. *Drosophila melanogaster* is extensively exploited in the studies of
 (A) Genetics (B) Behaviour
 (C) Nutrition (D) Ecology
36. The source of oxygen released into atmosphere from leaves is
 (A) carbon dioxide
 (B) nitrate
 (C) sulphate
 (D) water
37. 'Triploid' condition is seen in
 (A) ovary wall
 (B) endosperm
 (C) pollen mother cell
 (D) zygote
38. Seed dispersal through ants is called
 (A) Chiropterochory
 (B) Myrmecochoy
 (C) Zoochory
 (D) Ornithochory
39. Rice plants outcompete other species in the flooded soil as they show
 (A) quick germination
 (B) anaerobic respiration
 (C) thick seed coat
 (D) fast growth
40. Which one of the following is a part of sporophyte ?
 (A) Microspore (B) Megaspore
 (C) Pollen (D) Ovary
41. Multiple epidermis is seen in
 (A) *Triticum* (B) *Helianthus*
 (C) *Nerium* (D) *Solanum*
42. 'Bordeaux mixture' is a
 (A) tropical organic fungicide
 (B) systemic fungicide
 (C) fungicide and bactericide
 (D) tropical inorganic fungicide
43. Nimbin and Nimbidin are extracted from
 (A) Oleander (B) Neem
 (C) Ashwagandha (D) Amla
44. How will you call the study of plant and animal tissue outside the body in a glass tube ?
 (A) *In vitro* (B) *In silico*
 (C) *De novo* (D) *In vivo*
45. Water bloom is generally formed by the accumulation of
 (A) Blue-green algae (B) Bacteria
 (C) Bryophytes (D) Green algae
46. The term "Karyokinesis" means
 (A) Division of Protoplasm
 (B) Division of Nucleus
 (C) Division of Mitochondria
 (D) Division of Cytoplasm
47. 'Aflatoxins' are produced by
 (A) Fungi (B) Bacteria
 (C) Algae (D) Virus
48. "Sulphur shower" refers to
 (A) Yellow colour of pollen grains
 (B) Pollen dust of *Pinus*
 (C) Pollen dust of *Cycas*
 (D) Sulphur springs
49. "Black wood" is obtained from
 (A) *Albizia* (B) *Acacia*
 (C) *Pongamia* (D) *Dalbergia*
50. The functional unit of sudden and heritable change is
 (A) Muton (B) Recon
 (C) Cistron (D) Operon



51. Haemocyanin is a _____ respiratory pigment.

- (A) Red-orange (B) Blue
(C) Green (D) Red

52. Choose the correct statement.

- (A) Males can be the carrier for colour blindness.
(B) Daughter born to a colour blind woman and normal man can never be a colour blind.
(C) Father of a colour blind woman can never be a colour blind.
(D) Colour blindness is more common in females. ✗

53. Griffith effect in bacteria is more popularly known as

- (A) Transduction
(B) Transformation
(C) Recombination
(D) Conjugation

54. Choose the combination which is a blend of only recessive characters of *Pisum Sativum*.

- (A) Yellow cotyledon, Inflated unripe pod, Terminal flower, White seed coat
(B) Green cotyledon, Constricted unripe pod, Axial flower, Grey seed coat
(C) Green cotyledon, Constricted unripe pod, Terminal flower, White seed coat
(D) Yellow cotyledon, Inflated unripe pod, Axial flower, Grey seed coat

55. Orchid bee is a/an _____ species.

- (A) Keystone (B) Endangered
(C) Biosphere (D) Endemic

56. Choose the **wrong** statement.

- (A) Ratio between death rate and birth rate is vital index.
(B) Outward migration is known as emigration.
(C) Inherent ability to increase in number is biotic potential.
(D) Bell shaped age pyramid indicates stable population.

57. Suicidal bags of cells were first reported by

- (A) Robert Brown
(B) George Palade
(C) Dmitry Iosifovich Ivanovsky
(D) De Duve

58. ATP synthesis occurs in mitochondrial

- (A) Inner membrane
(B) Outer membrane
(C) Cristae
(D) Matrix

59. To dissolve egg covering, sperm produces

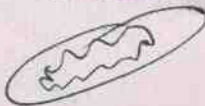
- (A) Hyaluronidase (B) Protease
(C) Lipase (D) Amylase

60. Placenta of human beings belongs to the category of

- (A) Endotheliochorial
(B) Haemochorial
(C) Syndesmochorial
(D) Epitheliochorial

61. The abyssal zone of oceans is characterized by

- (A) Absence of sunlight and all living organisms
(B) Presence of sunlight and producers
(C) Absence of sunlight and presence of consumers and decomposers
(D) Absence of sunlight but presence of producers



Age 10
Time

62. Sperm produces _____ to dissolve egg membranes.
 (A) Anti-fertilizin
 (B) Hyaluronic acid
 (C) Hyaluronidase
 (D) Fertilizin
63. Amphibians came into existence in _____ period.
 (A) Devonian (B) Mississippian
 (C) Pennsylvanian (D) Silurian
64. Which of the following is an ammonotelic animal?
 (A) Insects (B) Lizards
 (C) Fish (D) Amphibians
65. The extremities of animals are relatively shorter in the cooler parts than in warmer parts of the world. This is _____ rule.
 (A) Jordan's (B) Allen's
 (C) Bergmann's (D) Gloger's
66. Temperature, along with moisture and light affects the colouration of some animals. This is called _____ rule.
 (A) Allen's (B) Gloger's
 (C) Bergmann's (D) Jordan's
67. The _____ zone is absent in ponds.
 (A) Littoral (B) Sublittoral
 (C) Limnetic (D) Profundal
68. Bipinnaria is the larval form of
 (A) Echinus (B) Ascidians
 (C) Balanoglossus (D) Asterias
69. Ranikhet is a disease found in
 (A) Silkworms (B) Fowls
 (C) Fishes (D) Honey bees
70. Button lac is manufactured from
 (A) Seed lac
 (B) Molten lac
 (C) Crushed lac
 (D) Shellac
71. Base composition analysis of DNA was carried out by
 (A) Hershey A.D.
 (B) Gilbert W.
 (C) Meselson M.S.
 (D) Erwin Chargaff
72. In a DNA molecule, when a purine is replaced by another purine, it is called
 (A) Transversion
 (B) Tautomerization
 (C) Insertion
 (D) Transition
73. The Watson and Crick model of DNA is the _____ form of DNA.
 (A) B (B) Z
 (C) C (D) A
74. Y-chromosome in human beings is
 (A) Metacentric (B) Acrocentric
 (C) Submetacentric (D) Telocentric
75. Synaptonemal complex is completed during
 (A) Pachytene (B) Zygotene
 (C) Diplotene (D) Leptotene
76. A chromosome with a nearly terminal centromere is called
 (A) Telocentric (B) Acentric
 (C) Acrocentric (D) Metacentric

77. Genetically engineered *Pseudomonas putida* with XYL genes helps in degradation of
 (A) Pesticides (B) Fertilizers
 (C) Oil spills (D) Heavy metals
78. Guano is **not** seen in the excreta of
 (A) Whales (B) Seals ✓
 (C) Bats (D) Sea birds ✓
79. The body of Ascidia is enclosed in a crest made of
 (A) Chitin (B) Cellulose
 (C) Peptidoglycan (D) Tunicin
80. _____ is a living fossil.
 (A) Coelacanth (B) Caecilian
 (C) Labyrinthodont (D) Ostracoderm
81. The zoological name for the Great Indian Bustard is
 (A) *Pavo cristatus* - Peacock ✓
 (B) *Gallus gallus*
 (C) *Grus nigricollis*
 (D) *Choriotis nigriceps*
82. Identify the wrong pair with reference to Wild Life Sanctuary.
 (A) Point Calimere — Kerala ✓
 (B) Bandipur — Karnataka
 (C) Bharatpur — Rajasthan ✓
 (D) Anamalai — Tamil Nadu ✓
83. Cladogenesis refers to
 (A) splitting of groups
 (B) evolutionary advancement
 (C) pattern of origin of higher categories
 (D) evolutionary persistence
84. Lactate dehydrogenase is
 (A) Isoenzyme
 (B) Co-enzyme
 (C) Regulatory enzyme
 (D) Allosteric enzyme
85. The reddish violet colour respiratory pigment is known as
 (A) Haemocyanin ✓
 (B) Haemoerythrin ✓
 (C) Chlorocruorin ✓
 (D) Haemoglobin ✓
86. The lipids which contain carbohydrates in combination with aliphatic acids are known as
 (A) Glycolipids (B) Sulfolipids
 (C) Lipoproteins (D) Phospholipids
87. The Z-DNA has _____ base pairs per helix.
 (A) 10 (B) 9.5
 (C) 12 (D) 11
88. Which of the following diseases is **not** caused by sex linked inheritance?
 (A) Tay-Sach's disease?
 (B) Haemophilia ✓
 (C) Duchenne muscular dystrophy?
 (D) Colour blindness ✓
89. In dominant epistasis, the phenotypic ratio is
 (A) 9 : 6 : 1 (B) 12 : 3 : 1
 (C) 13 : 3 (D) 9 : 3 : 4

90. K. Mullis and M. Smith were awarded the Nobel Prize for
 (A) Genetic regulation of cholesterol metabolism
 (B) Discovery of oncogenes
 (C) Development of polymerase chain reaction and site directed mutagenesis
 (D) Genetic control of early development in *Drosophila*
91. The amino acid with an amide side (R) group is
 (A) Serine (B) Glutamine
 (C) Phenylalanine (D) Glycine
92. Law of limiting factors in photosynthesis was given by
 (A) D. Calvin (B) F. Blackman
 (C) S. Hipman (D) T. Arnon
93. Logistic growth occurs when there is
 (A) Sexual reproduction only
 (B) A fixed carrying capacity
 (C) No inhibition from crowding
 (D) Asexual reproduction only
94. Development of soil from parent rock is termed as
 (A) Edaphotropism
 (B) Pedogenesis
 (C) Edaphic climax
 (D) Edaphic syndrome
95. Adult urochordates have
 (A) Sac-like body with paired appendages
 (B) Well developed, segmented body
 (C) Unsegmented body with a prominent tail
 (D) Degenerate, sac-like, unsegmented body
96. Which one of these is a good example of metamorphosis?
 (A) Regeneration of broken tail of lizard
 (B) Growth and development of young one of kangaroo in its marsupium
 (C) Hatching of maggot from the egg of housefly
 (D) Development of adult from pupa of insects
97. Sepia and Octopus are two common marine animals. They show active movements in water by
 (A) undulating movement of lateral fins
 (B) attachment with other animals through its suckers
 (C) the movement of flagellum
 (D) jet of water propelled through siphon
98. Main characteristic features of Arthropoda
 (A) external skeletal scales, segmentation, one pair of antennae
 (B) chitinous exoskeleton, external segmentation, jointed legs
 (C) external segmentation, one pair of chelicerae, one pair pedipalpi
 (D) external segmentation, hair, 3 pairs of jointed legs
99. Convex lens is used to correct
 (A) Myopia
 (B) Presbyopia
 (C) Astigmatism
 (D) Hypermetropia
100. Graves' disease is caused due to
 (A) Hyperthyroidism
 (B) Hypoparathyroidism
 (C) Hyperparathyroidism
 (D) Hypothyroidism

Bones
Ca²⁺ pH

101. In hypoparathyroidism
(A) plasma calcium and inorganic phosphorus are high
(B) plasma calcium is low and inorganic phosphorus is high
(C) plasma calcium is high and inorganic phosphorus is low
(D) plasma calcium and inorganic phosphorus are low
102. Hopkins - Cole Test is for the identification of
(A) Tryptophan
(B) Arginine
(C) Cysteine
(D) Tyrosine
103. Chronic inflammation in response to foreign bodies is characterized by the accumulation of
(A) Sensitized T-lymphocytes
(B) Platelets
(C) Macrophages
(D) Polymorphonuclear leukocytes
104. The most effective bacterial insecticide used to control wide range of lepidopteran insects is
(A) *Bacillus papillae*
(B) *Bacillus lentimorbus*
(C) *Pseudomonas cepacia*
(D) *Bacillus thuringiensis*
105. The 'slit-sampler method' is used to sample the quality of
(A) Water (B) Food
(C) Hospital linen (D) Air
106. Rabies virus is shaped like a
(A) Rectangle (B) Spiral
(C) Bullet (D) Sphere
107. Dengue fever is transmitted by which of the following mosquitoes?
(A) Aedes (B) Culex
(C) Mansoni (D) Anopheles
108. The graft taken from a cadaver is
(A) Isograft (B) Allograft
(C) Xenograft (D) Autograft
109. The complex formed in the replication bubble of a double stranded DNA during synthesis is known as
(A) helicase
(B) topoisomerase
(C) primosome
(D) primase
110. Glasswares are best sterilised by
(A) Autoclaving
(B) Irradiation
(C) Ethylene dioxide
(D) Hot air oven
111. Lymphatic filariasis was caused by the parasite
(A) *Mansonella perstans*
(B) *Wuchereria bancrofti*
(C) *Onchocerca volvulus*
(D) *Loa loa*
112. Nitrogen fixation in blue-green algae is done by the specialised structures known as
(A) heterocyst (B) akinete
(C) hormogonium (D) nanocyst
113. The technique used to separate vaporizable substances is called
(A) gas chromatography
(B) adsorption column chromatography
(C) thin layer chromatography
(D) paper chromatography

114. Chitin is the most popular material to construct nanoshells, because it
- has the properties of binding to DNA
 - is stable at room temperature
 - is naturally derived and biodegradable
 - is easy to synthesize
115. Viroids are infectious agents, characterised by
- ssDNA not encased by protein coat
 - dsRNA not encased by protein coat
 - dsDNA not encased by protein coat
 - ssRNA not encased by protein coat
116. The chemical mutagens covered under DNA Polymerases are
- base analogs
 - deaminating agents
 - intercalating agents
 - alkylating agents
117. P²¹ and P¹⁵ proteins are
- Cyclins
 - Oncogenes
 - Growth factors
 - Cdk inhibitors
118. Hypoxia water has
- Low oxygen
 - High temperature
 - Low temperature
 - High oxygen
119. Genetic erosion is
- Loss of biodiversity.
 - Loss of gene from gene pool.
- II is true I is false
 - Both I and II are true
 - Both I and II are false
 - I is true II is false
120. A substance present in nature in greater than natural abundance due to human activity is called
- Smog
 - Contaminant
 - Pollutant
 - Waste
121. Hardness in water is due to
- Iron
 - Aluminium
 - Calcium
 - Magnesium
- II and III
 - I and III
 - III and IV
 - I and II
122. Fly ash is the pollutant generated by
- Oil refinery
 - Fertilizer plants
 - Mining
 - Thermal power plants
123. The most stable ecosystem is
- Forest
 - Desert
 - Mountains
 - Ocean
124. The flagellum in bacteria is made up of
- Elastin
 - Myosin
 - Actin
 - Flagellin
125. The chief function of Lysosome is
- Extracellular Digestion
 - Secretion
 - Respiration
 - Intercellular Digestion
126. Cellulose is abundantly present in
- Secondary wall
 - Tertiary wall
 - Middle Lamella
 - Primary wall
127. The osmotic pressure of a solution increases with rise in
- Pressure
 - Humidity
 - Rancidity
 - Temperature

128. Which of the following is a structure that can be created by nanoengineering of DNA ?
 (A) Trans-configuration
 (B) Boot-configuration
 (C) Cubical structures
 (D) Cis-configuration
129. Which of the following lack enzymes ?
 (A) Fungi (B) Virus
 (C) Bacteria (D) Algae
130. The activity of bacteria causing metals to be deposited as insoluble oxides and sulphides is called
 (A) Biotransformation
 (B) Biomineralization
 (C) Bioplasting
 (D) Biohydrometallurgy
131. The phenomenon of the component cells of the callus to form a whole plant is called
 (A) Regeneration
 (B) Totipotency
 (C) Dedifferentiation
 (D) Redifferentiation
132. Nitrogen bases do **not** contain
 (A) Carbon (B) Phosphorus
 (C) Hydrogen (D) Nitrogen
133. Which one of the following can flow ?
 (A) Gelatin
 (B) Emulsion
 (C) Paste
 (D) Jelly
134. The following are biogenic amines **except** :
 (A) GABA
 (B) 5-OH Tryptamine
 (C) Glutamine
 (D) Epinephrine
135. The organ affected in our body during polio infection is
 (A) Spinal cord
 (B) Intestine
 (C) Skin
 (D) Stomach
136. The relative amount of ribosomal RNA in *E. coli* is
 (A) 50% (B) 15%
 (C) 5% (D) 80%
137. A chronic diabetic with a history of more than 30 years of Type 2 diabetes shows symptoms of anemia, fatigue, and has a serum creatinine value of 3.4 mg/dl and excretes about 300 mg of protein per day. His insulin requirements have been reduced. What macrovascular complication is he having ?
 (A) Liver damage
 (B) Neuropathy
 (C) Nephropathy
 (D) Muscle wasting due to muscular dystrophy
138. Addison's disease is due to
 (A) Hyperthyroidism
 (B) Hypo function of adrenal cortex
 (C) Hyper function of adrenal cortex
 (D) Hypothyroidism
139. I. Reticulocyte has ribonucleic acid in the cytoplasm. ✓
 II. Matured Erythrocyte has numerous number of nuclei. ✗
 (A) II alone is correct
 (B) I alone is correct
 (C) Both I and II are correct
 (D) None of them are correct

140. Spermatozoa in seminal fluid utilises the following sugar for its metabolism :

- (A) fructose (B) galactose
(C) mannose (D) glucose

141. Which of the following lipoproteins act as a carrier of exogenous triglycerides ?

- (A) VLDL (B) HDL
(C) LDL (D) Chylomicrons

142. In Vitamin D poisoning

- (A) both serum and urinary calcium are low
(B) the serum calcium is low and urinary calcium is high
(C) the serum calcium is high and urinary calcium is normal
(D) both serum and urinary calcium are high

143. Focal length of eye lens is obtained by

- (A) iris muscles
(B) ciliary muscles
(C) vitreous humour
(D) cornea

144. Find out the correct answer by matching Column A with Column B :

Column A

Column B

- | | |
|----------------------|--------------|
| 1. Rabies | a. Protozoan |
| 2. Amoebic dysentery | b. Fungi |
| 3. Leprosy | c. Virus |
| 4. Ring worm | d. Bacteria |

- (A) 1-c, 2-a, 3-d, 4-b
(B) 1-d, 2-c, 3-a, 4-b
(C) 1-d, 2-a, 3-b, 4-c
(D) 1-c, 2-d, 3-b, 4-a

145. Antibodies combine with antigens

- (A) only at variable regions
(B) both constant and variable regions
(C) only at mutated regions
(D) only at constant regions

146. Which antibody is increased in asthma and hay fever condition ?

- (A) IgA (B) IgE
(C) IgM (D) IgG

147. The relationship between an enzyme and a reactant molecule can best be described as

- (A) an association stabilized by a covalent bond
(B) one in which the enzyme is changed permanently
(C) a permanent mutual alteration of structure
(D) temporary association

148. Tyrosine kinase activity is present in

- (A) β -Adrenergic receptors
(B) Cholinergic receptors
(C) Insulin receptors
(D) α -Adrenergic receptors

149. Brown adipose tissue is

- (A) characterised by high content of mitochondria
(B) associated with high activity of ATP synthase
(C) characterised by low content of cytochromes
(D) a prominent tissue in humans

150. Fecal stercobilinogen is increased in

- (A) Hepatic jaundice
(B) Viral hepatitis
(C) Obstructive jaundice
(D) Haemolytic jaundice

151. A herbicide formulation which is a clear solution turns milky white when mixed with water is

- (A) Emulsifiable concentrate
- (B) Soluble concentrate
- (C) Suspension concentrate
- (D) Aqueous concentrate

152. The gas which causes depletion of ozone layer in the atmosphere is

- (A) Chloro fluoro carbon
- (B) Ethane
- (C) Methane
- (D) Carbon dioxide

153. Type of nursery used in paddy transplanter is

- (A) raised bed
- (B) protray
- (C) mat
- (D) conventional

154. Anaerobic biodegradation is a

- (A) thermophysical reaction
- (B) biochemical reaction
- (C) biophysical reaction
- (D) thermochemical reaction

155. Finned tube heat exchanger is used for

- (A) increasing the heat transfer by natural convection
- (B) decreasing the pressure drop in the heat exchanger
- (C) getting more surface area for heat transfer
- (D) increasing the thermal conductivity of air

156. To support the disc on a standard disc plough _____ are used.

- (A) taper roller bearing
- (B) large size ball bearing
- (C) needle bearing
- (D) heavy duty bush bearing

157. A two bladed flywheel type forage cutter rotates at 60 rpm. At a feed rate of 1.26 metres per minute, theoretical length of cut of the forage will be

- (A) 10.5 mm
- (B) 21.0 mm
- (C) 42.0 mm
- (D) 5.3 mm

158. Energy required to break a drop of liquid into small droplets will depend mainly on the

- (A) viscosity of the liquid
- (B) density of the liquid
- (C) heat capacity of the liquid
- (D) surface tension of the liquid

159. Contour trenching is preferred to

- (i) control the landslide.
- (ii) conserve the moisture.

- (A) (i) is true and (ii) is false
- (B) (i) is false and (ii) is true
- (C) Both (i) and (ii) are false
- (D) Both (i) and (ii) are true

160. Most suitable method of irrigation for potato crop is

- (A) check basin method
- (B) furrow method
- (C) border method
- (D) corrugation method

161. The major controlling factor in separation of grain by fluidized bed separator is

- (A) shape and texture of grain
- (B) air velocity and weight of grain
- (C) size and aerodynamic properties of grain
- (D) shape and size of grain

162. The nutrient loss in heating of food products is guided by _____ order reaction.

- (A) First
- (B) Second
- (C) Third
- (D) Zero

163. The process by which biodegradation of special compounds is accelerated by introducing microbial cells is called
(A) Biomineralisation
(B) Bioremediation
(C) Biodeterioration
(D) Bioaugmentation
164. The reduction of BOD (Biochemical Oxygen Demand) by 90% is achieved in sewage via
(A) secondary treatment
(B) tertiary treatment
(C) fermentation
(D) primary treatment
165. Vermicomposting is a type of composting process involving
(A) animal manure (B) earthworms
(C) wooden ash (D) plant material
166. The common lab contaminant is
(A) *Clostridium* sp.
(B) *Bacillus* sp.
(C) *Mycobacterium* sp.
(D) *Pseudomonas* sp.
167. Immunoglobulin Alpha (IgA) is an/a
(A) secretory Ab (B) primary Ab
(C) secondary Ab (D) allergic Ab
168. The plasmids determining "penicillin resistance" in Staphylococci are transferred from cell to cell by
(A) Lysogenic conversion
(B) Transformation
(C) Transduction
(D) Conjugation
169. A mother of blood group O has a group O child. The father could be of blood type
(A) AB only (B) A or B
(C) A or B or O (D) O only
170. The highly sensitive technique that can measure very less concentration (eg. 0.001 µg/ml) of Ag/Ab in the given sample is
(A) ELISA (Enzyme Linked Immuno Sorbent Assay)
(B) CIE (Counter Immuno Electrophoresis)
(C) Schick test
(D) RIA (Radio Immuno Assay)
171. The first company to produce the genetically engineered commercial human insulin was
(A) Monsanto (B) Eli Lilly
(C) Genei (D) Ranbaxy
172. Which of the following enzymes is required for transposition?
(A) Telomerase
(B) Reverse transcriptase
(C) DNA Gyrase
(D) Transposase
173. Principal dietary source of vitamin K is
(A) green leafy vegetables
(B) cereals and cornflakes
(C) sugar and sugar products
(D) pulses and coconut
174. The term "tropical oils" refers to
(A) sunflower oil and safflower oil
(B) palm oil and coconut oil
(C) olive oil and almond oil
(D) corn oil and soyabean oil
175. The study of the ageing process and its progressive events is called
(A) Diabetology
(B) Oncology
(C) Gerontology
(D) Gastroenterology
176. Match the following and choose the correct answer :
- | | |
|------------|-----------------------------------|
| 1. Motel | a. Luxury hotel on a luxury liner |
| 2. Floatel | b. Hotel on wheels |
| 3. Rotel | c. Hotel with helipad facilities |
| 4. Lotel | d. Hotel situated on a highway |
- (A) 1-d, 2-a, 3-b, 4-c
(B) 1-a, 2-d, 3-c, 4-b
(C) 1-d, 2-b, 3-a, 4-c
(D) 1-c, 2-b, 3-a, 4-d
177. The national drink of Russia, produced from potato and sweet potato starch is
(A) Gin (B) Whisky
(C) Brandy (D) Vodka

178. Souffle is prepared from
 (A) egg yolk, gelatine, cream and sugar
 (B) milk, sugar, egg yolk and egg white
 (C) milk, sugar, milk powder and cream
 (D) milk, sugar syrup, maida and egg
179. The main course in a French Classical menu is called
 (A) Entrée (B) Rôti
 (C) Bonne Bouche (D) Rélève
180. Country Style Service is another name given for
 (A) English Service
 (B) European Service
 (C) American Service
 (D) Russian Service

181. Match the following and choose the correct answer :

Functional Properties of Food Additives

Function	Example
1. pH control/Buffers	a. Silicates
2. Anticaking agents	b. Pectin
3. Dough conditioner	c. Phosphates
4. Thickening agent	d. Gums
(A) 1-b, 2-c, 3-a, 4-d	
(B) 1-c, 2-a, 3-d, 4-b	
(C) 1-d, 2-a, 3-b, 4-c	
(D) 1-a, 2-b, 3-c, 4-d	

182. Assertion :

There is increased rate of sudden infant death or cot death in breast-fed infants.

Reason :

The infants are very sensitive to human milk and more possibility of aspiration.

- (A) Assertion is true and Reason is false
 (B) Assertion and Reason are false
 (C) Assertion and Reason are true
 (D) Assertion is false and Reason is true

183. The typical odour of garlic is due to
 (A) Alliin (B) Sinigrin
 (C) Ficin (D) Allicin

184. "Fruit cordial" is a
 (A) fruit juice which is concentrated by the removal of water
 (B) fruit juice strained, but contains moderate quantities of fruit pulp
 (C) fruit juice pressed out of a fruit
 (D) fruit squash from which all suspended material is completely eliminated

185. The only inorganic acid employed as a food acidulant is
 (A) Fumaric acid
 (B) Phosphoric acid
 (C) Malic acid
 (D) Tartaric acid

186. Match the following and choose the correct answer :

Fruits	Predominant acids
1. Apples	a. Tartaric acid
2. Oranges	b. Oxalic acid
3. Grapes	c. Citric acid
4. Rhubarb	d. Malic acid

- (A) 1-b, 2-a, 3-b, 4-a
 (B) 1-a, 2-b, 3-d, 4-c
 (C) 1-d, 2-c, 3-a, 4-b
 (D) 1-c, 2-d, 3-a, 4-d

187. Match the following and choose the correct answer :

Food	Enzymes
1. Papaya	a. Papain
2. Pineapple	b. Ficin
3. Figs	c. Rhozyme
4. Fungi	d. Bromelin

- (A) 1-c, 2-d, 3-a, 4-b
 (B) 1-b, 2-a, 3-c, 4-d
 (C) 1-a, 2-d, 3-b, 4-c
 (D) 1-d, 2-b, 3-c, 4-a

188. The yolk of the egg contains simple proteins known as
 (A) livetins
 (B) ovalbumin
 (C) conalbumin
 (D) phospho-proteins

189. Which of the following are crystalline candies ?

- (A) Starch jellies and pectin jellies
- (B) Caramels and kisses
- (C) Fondant and penochi
- (D) Marshmallows and toffees

190. Match the following and choose the correct answer :

Methods	Properties
1. Munsell disc	a. Tenderness
2. Seed displacement	b. Elastic solids
3. Shortometer	c. Volume
4. Gelometer	d. Colour
(A) 1-a, 2-b, 3-c, 4-d	
(B) 1-b, 2-a, 3-d, 4-c	
(C) 1-c, 2-d, 3-b, 4-a	
(D) 1-d, 2-c, 3-a, 4-b	

191. Match the following and choose the correct answer :

Objective tests	Uses
1. Gelometer	a. Consistency
2. Index to volume	b. Firmness
3. Line spread tests	c. Lightness of product
4. Specific gravity	d. Area of a product
(A) 1-b, 2-c, 3-d, 4-a	
(B) 1-b, 2-d, 3-a, 4-c	
(C) 1-a, 2-b, 3-d, 4-c	
(D) 1-d, 2-a, 3-c, 4-b	

192. Match the following and choose the correct answer :

1. Ridgelimeter	a. Gels
2. Penetrometer	b. Doughs
3. Farinograph	c. Batter
4. Viscosimeter	d. Cheese
(A) 1-a, 2-b, 3-c, 4-d	
(B) 1-a, 2-d, 3-b, 4-c	
(C) 1-b, 2-a, 3-d, 4-c	
(D) 1-d, 2-c, 3-a, 4-b	

193. A post-harvest disease in mango

- (A) Grey blight
- (B) Powdery mildew
- (C) Sooty mould
- (D) Anthracnose

194. The term 'Agriculture' was derived from the language

- (A) Latin
- (B) Greek
- (C) German
- (D) English

195. The chemical Butachlor is mostly used in agriculture as

- (A) pre-emergence herbicide
- (B) growth hormone
- (C) anti-transpirant
- (D) post-emergence herbicide

196. Water requirement of rice crop is estimated as

- (A) 1200 mm
- (B) 2200 mm
- (C) 2000 mm
- (D) 600 mm

197. Best suited growth hormone used to break down the dormancy in groundnut is

- (A) GA
- (B) IBA
- (C) CCC
- (D) NAA

198. Which crop is called as king of cereal crops ?

- (A) Barley
- (B) Rice
- (C) Wheat
- (D) Oat

199. Father of Indian Plant Pathology is

- (A) Anton van Leeuwenhoek
- (B) Anton de Bary
- (C) E.J. Butler
- (D) M.W. Beijerinck

200. A complete set (n) of chromosomes inherited as a unit from one parent is known as

- (A) Genomes
- (B) Alleles
- (C) Multiple alleles
- (D) Genes