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/punishment 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.”

AF 2013/PAGE 1.
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 forest 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 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) Autosomal
(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) Emblica 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) Myrmecochory  
(C) Zoochorhy  
(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 sporephyle?
(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

\[ \text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{Sunlight}} \text{C}_6\text{H}_12\text{O}_6 + \text{O}_2 \]
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

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SPACE FOR ROUGH WORK
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 amniotelic 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) Tautomeration
(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 re (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) *Choriotes nigriceps*

82. Identify the wrong pair with reference to Wild Life Sanctuary.
(A) Point Calimer — 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) Haemerythrin
(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
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 popilliae
   (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
(A) has the properties of binding to DNA
(B) is stable at room temperature
(C) is naturally derived and biodegradable
(D) is easy to synthesize

115. Viroids are infectious agents, characterised by
(A) ssDNA not encased by protein coat
(B) dsRNA not encased by protein coat
(C) dsDNA not encased by protein coat
(D) ssRNA not encased by protein coat

116. The chemical mutagens covered under DNA Polymerases are
(A) base analogs
(B) deaminating agents
(C) intercalating agents
(D) alkylating agents

117. P21 and P15 proteins are
(A) Cyclins (B) Oncogenes
(C) Growth factors (D) Cdk inhibitors

118. Hypoxia water has
(A) Low oxygen
(B) High temperature
(C) Low temperature
(D) High oxygen

119. Genetic erosion is
I. Loss of biodiversity.
II. Loss of gene from gene pool.
(A) I is true II is false
(B) Both I and II are true
(C) Both I and II are false
(D) I is true II is false

120. A substance present in nature in greater than natural abundance due to human activity is called
(A) Smog (B) Contaminant
(C) Pollutant (D) Waste

121. Hardness in water is due to
I. Iron
II. Aluminium
III. Calcium
IV. Magnesium
(A) II and III (B) I and III
(C) III and IV (D) I and II

122. Fly ash is the pollutant generated by
(A) Oil refinery
(B) Fertilizer plants
(C) Mining
(D) Thermal power plants

123. The most stable ecosystem is
(A) Forest (B) Desert
(C) Mountains (D) Ocean

124. The flagellum in bacteria is made up of
(A) Elastin (B) Myoxin
(C) Actin (D) Flagellin

125. The chief function of Lysosome is
(A) Extracellular Digestion
(B) Secretion
(C) Respiration
(D) Intracellular Digestion

126. Cellulose is abundantly present in
(A) Secondary wall
(B) Tertiary wall
(C) Middle Lamella
(D) Primary wall

127. The osmotic pressure of a solution increases with rise in
(A) Pressure
(B) Humidity
(C) Rancidity
(D) 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) Biominerization
   (C) Biopating
   (D) Biodydrometallurgy

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:

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rabies</td>
<td>a. Protozoan</td>
</tr>
<tr>
<td>2. Ameobic dysentery</td>
<td>b. Fungi</td>
</tr>
<tr>
<td>3. Leprosy</td>
<td>c. Virus</td>
</tr>
<tr>
<td>4. Ring worm</td>
<td>d. Bacteria</td>
</tr>
</tbody>
</table>

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 sterobilinogen 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) protry
   (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.

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) Genetech (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) Rôtî
(C) Bonne Bouche  (D) Rôleve

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. pH control/Buffers</td>
<td>a. Silicates</td>
</tr>
<tr>
<td>2. Anticaking agents</td>
<td>b. Pectin</td>
</tr>
<tr>
<td>3. Dough conditioner</td>
<td>c. Phosphates</td>
</tr>
<tr>
<td>4. Thickening agent</td>
<td>d. Gums</td>
</tr>
</tbody>
</table>

(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) Allin   (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:

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Predominant acids</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apples</td>
<td>a. Tartaric acid</td>
</tr>
<tr>
<td>2. Oranges</td>
<td>b. Oxalic acid</td>
</tr>
<tr>
<td>3. Grapes</td>
<td>c. Citric acid</td>
</tr>
<tr>
<td>4. Rhubarb</td>
<td>d. Malic acid</td>
</tr>
</tbody>
</table>

(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:

<table>
<thead>
<tr>
<th>Food</th>
<th>Enzymes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Papaya</td>
<td>a. Papain</td>
</tr>
<tr>
<td>2. Pineapple</td>
<td>b. Ficin</td>
</tr>
<tr>
<td>3. Figs</td>
<td>c. Rhozyme</td>
</tr>
<tr>
<td>4. Fungi</td>
<td>d. Bromelin</td>
</tr>
</tbody>
</table>

(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:

<table>
<thead>
<tr>
<th>Methods</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Munsell disc</td>
<td>a. Tenderness</td>
</tr>
<tr>
<td>2. Seed displacement</td>
<td>b. Elastic solids</td>
</tr>
<tr>
<td>3. Shortometer</td>
<td>c. Volume</td>
</tr>
<tr>
<td>4. Gelometer</td>
<td>d. Colour</td>
</tr>
<tr>
<td>(A) 1-a, 2-b, 3-c, 4-d</td>
<td></td>
</tr>
<tr>
<td>(B) 1-b, 2-a, 3-d, 4-c</td>
<td></td>
</tr>
<tr>
<td>(C) 1-c, 2-d, 3-b, 4-a</td>
<td></td>
</tr>
<tr>
<td>(D) 1-d, 2-c, 3-a, 4-b</td>
<td></td>
</tr>
</tbody>
</table>

191. Match the following and choose the correct answer:

<table>
<thead>
<tr>
<th>Objective tests</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gelometer</td>
<td>a. Consistency</td>
</tr>
<tr>
<td>2. Index to volume</td>
<td>b. Firmness</td>
</tr>
<tr>
<td>3. Line spread tests</td>
<td>c. Lightness of product</td>
</tr>
<tr>
<td>4. Specific gravity</td>
<td>d. Area of a product</td>
</tr>
<tr>
<td>(A) 1-b, 2-c, 3-d, 4-a</td>
<td></td>
</tr>
<tr>
<td>(B) 1-b, 2-d, 3-a, 4-c</td>
<td></td>
</tr>
<tr>
<td>(C) 1-a, 2-b, 3-d, 4-c</td>
<td></td>
</tr>
<tr>
<td>(D) 1-d, 2-a, 3-c, 4-b</td>
<td></td>
</tr>
</tbody>
</table>

192. Match the following and choose the correct answer:

| Ridgometer | a. Gels |
| Penetrometer | b. Doughs |
| Farinograph | c. Batter |
| 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