

Question Booklet Code :

Register
Number

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2019
BIOLOGY

Time Allowed : 3 Hours]

[Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. The applicant will be supplied with Question Booklet 15 minutes before commencement of the examination.
2. This Question Booklet contains 200 questions. Prior to attempting to answer, the candidates are requested to check whether all the questions are there in series and ensure there are no blank pages in the question booklet. **In case any defect in the Question Paper is noticed, it shall be reported to the Invigilator within first 10 minutes and get it replaced with a complete Question Booklet. If any defect is noticed in the Question Booklet after the commencement of examination, it will not be replaced.**
3. Answer all questions. All questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An answer sheet will be supplied to you, separately by the Room Invigilator to mark the answers.
6. You will also encode your Question Booklet Code with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per Commission's notification.
7. Each question comprises *four* responses (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are **four** circles (A), (B), (C) and (D) against each question. To answer the questions you are to mark with Blue or Black ink Ball point pen **ONLY ONE** circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. *e.g.* If for any item, (B) is the correct answer, you have to mark as follows :

(A) ● (C) (D)
9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the time of examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. **Do not make any marking in the question booklet except in the sheet before the last page of the question booklet, which can be used for rough work. This should be strictly adhered.**
11. Applicants have to write and shade the total number of answer fields left blank on the boxes provided at side 2 of OMR Answer Sheet. An extra time of 5 minutes will be given to specify the number of answer fields left blank.
12. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.

SEAL

SPACE FOR ROUGH WORK

1. Find out the false statement

Vertebrates are

- (A) bilateral symmetry (B) sexual reproduction predominant
 (C) good regeneration power (D) closed circulatory system

2. Pearl Oyster, Pinctada vulgaris belongs to the class

- (A) Bivalvia (B) Scaphopoda
(C) Gastropoda (D) Cephalopoda

3. Match the following :

- | | |
|---------------------|-----------|
| (a) Peking man | 1. Africa |
| (b) Ternitier man | 2. Europe |
| (c) Neanderthal man | 3. China |
| (d) Solo man | 4. Java |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 3 | 1 | 2 | 4 |
| (B) | 2 | 3 | 1 | 4 |
| (C) | 1 | 4 | 3 | 2 |
| (D) | 4 | 2 | 3 | 1 |

4. _____ was the first step in human evolution.

- (A) Bipedalism (B) Increasing of brain size
(C) Elongation of lower limbs (D) Changing of pelvis shape

5. The first life in earth was originated during early _____

- (A) Azoic Era (B) Archaeozoic Era
(C) Palaeozoic Era (D) Proterozoic Era

6. The amphibian cave-dweller is _____.
- (A) *Gronias nigrilabis* (B) *Chologaster cornutus*
 (C) *Amblyopsis spelaeus* (D) *Spelerpes maculicanda*
7. Which of the following is a digenetic nematode parasite
- (A) *Fasciola hepatica* (B) *Wucheria bancrofti*
 (C) *Taenia Solium* (D) *Ascaris lumbricoides*
8. Human karyotypes are routinely prepared from
- (A) erythrocytes (B) melanocytes
 (C) Leucocytes (D) Karyocytes
9. Fore limbs of frog, bird, whale and man is an example for
- (A) Vestigial organs (B) Homologous organs
 (C) Primitive organs (D) Analogous organs
10. The length of silk thread produced by a single caterpillar is
- (A) 100-700 m (B) 500-1000 m
 (C) 1000-1500 m (D) 800-1200 m
11. Select the wrong answer from the following
- Blow flies inhabiting the corpse can provide forensic investigators with meaningful information about
- (A) Time of death
 (B) Culprit
 (C) Movement of Corpse from one site to another
 (D) Manner of death
12. Which one of the following inhibits the conduction of nerve impulses
- (A) Acetyl Choline (B) Acetylcholine esterase
 (C) Coenzyme - A (D) Acetate

13. Amnion helps in
 (A) Protection from shocks (B) Digestion
(C) Excretion (D) Respiration
14. The monoecious animals have
(A) Male reproductive organ only
(B) Female reproductive organ only
(C) Either male or female reproductive organ
 (D) Male and female reproductive organs
15. During muscle contraction the sarcomere length becomes _____ according to the sliding filament theory.
(A) No change (B) Shorter
(C) Longer (D) Longer than Shorter
16. The cephalothorax is divided into _____ segments in class pycnogonida.
(A) 4 (B) 5
 (C) 3 (D) 2
17. The prolonged severe pain with sweating and vomiting is the symptom of _____.
(A) Atrial fibrillation (B) Ventricular Fibrillation
(C) Angina Pectoris (D) Myocardial Infarction
18. The post extra systolic potentiation in human heart is due to the greater availability of _____ ions.
(A) Na^+ (B) K^+
 (C) Ca^{++} (D) Cl^-

19. The helical diameter for B-DNA and Z-DNA are respectively
 (A) 2.37 nm and 1.84 nm (B) 2.55 nm and 2.37 nm
(C) 1.84 nm and 2.37 nm (D) 2.55 nm and 1.84 nm
20. Lipase, choline esterase, Urease are enzymes which belong to the class of
(A) Oxidoreductases (B) Hydrolases
(C) Isomerase (D) Transferase
21. Drugs involved in lowering cholesterol in blood
 (A) Statin's (B) Tenofovir
(C) Zidovudine (D) Captopril
22. The following are the enzymes attached to metals. choose the metalloenzyme associated with Zinc from the options given below
(i) Xanthine Oxidase
(ii) alcohol dehydrogease
(iii) Carbonic anhydrase
(iv) Cytochrome oxidase
(A) (i) and (iv) (B) (ii) and (iii)
(C) (i) and (iii) (D) (ii) and (iv)
23. Which of the following lactate dehydrogenase enzyme is present in liver and skeletal muscle.
(A) LDH₄ and LDH₃ (B) LDH₄ and LDH₅
(C) LDH₁ and LDH₅ (D) LDH₂ and LDH₄

24. Match the following and choose the correct option given below

- | | |
|------------------------|--------------------|
| (a) Calliphora vicina | 1. Black blow fly |
| (b) Phaenicia sericata | 2. Green blow fly |
| (c) Lucilia illustris | 3. Bronze blow fly |
| (d) Phormia regina | 4. Blue blow fly |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 4 | 3 | 2 | 1 |
| (B) | 1 | 2 | 3 | 4 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 3 | 4 | 2 | 1 |

25. The N⁹ of a purine ring binds with which carbon of the pentose sugar in DNA to form a-covalent bond in the purine nucleoside

- | | |
|--|--------------------|
| <input checked="" type="checkbox"/> (A) C ₁ | (B) C ₃ |
| (C) C ₅ | (D) C ₂ |

26. The synthetic analog of epinephrine which acts as an agonists is

- | | |
|-----------------|---|
| (A) Propranolol | <input checked="" type="checkbox"/> (B) Isoproterenol |
| (C) Serotonin | (D) Histamine |

27. The first line of screening test for diabetes is

- | | |
|--|----------|
| (A) glycated haemoglobin | (B) GTT |
| <input checked="" type="checkbox"/> (C) glycosuria | (D) VLDL |

28. The prepro insulin and proinsulin involved as precursors for synthesis of insulin contain how many amino acids respectively

- | | |
|--|----------------|
| <input checked="" type="checkbox"/> (A) 108 and 86 | (B) 86 and 108 |
| (C) 21 and 30 | (D) 30 and 21 |

29. Which of the following lipid storage disease contain accumulation of Ceramide

- | | |
|--|---------------------|
| (A) Gaucher's disease | (B) Fabry's disease |
| <input checked="" type="checkbox"/> (C) Farber's disease | (D) Pompe's disease |

30. Which among the following is a specific carcinogenicity test?
(A) HLA typing (B) Widal Test
(C) Comet Assay (D) Ames Test
31. A compound resulting in cleavage of DNA strands at the points where nitrogenous bases are missing in Maxim and Gilbert's method of DNA sequencing.
(A) Dimethyl sulphate (B) Piperidine
(C) Hydrazine (D) Rnase
32. In RIA, labelled antigen and unlabelled antigen compete for limited number of
 (A) antibodies (B) antigens
(C) complement (D) flourscent compounds
33. DNA damage in cell can be detected by
 (A) Single cell gel electrophoresis
(B) Zero integrated field electrophoresis
(C) Field inversion gel electrophoresis
(D) Capillary electrophoresis
34. When laboratories perform nuclear DNA testing, upto how many matches of short tandem repeats (STR) are analysed when comparing samples of two individuals.
 (A) 16 STR (B) 5 STR
(C) 2 STR (D) 7 STR
35. A PCR based molecular genetic marker is
 (A) RFLP (B) AFLP
(C) RAPD (D) VNTR
36. Which one of the following methods Protein antigens are detected
(A) Southern blotting (B) Northern blotting
 (C) Western blotting (D) PCR

37. About 60% of the Semen volume is derived from
(A) Epididymis (B) Seminal vesicles
(C) Bulbourethral glands (D) Prostate glands
38. The length of the primer sequence for RAPD technique is
(A) 10 – 20 nucleotides (B) 20 nucleotides
(C) 6 – 8 nucleotides (D) 10 nucleotides
39. Taq DNA polymerase enzyme exhibits best activity at _____ temperature
 (A) 72° C (B) 90° C
(C) 40° C (D) 50° C
40. The gram positive bacteria can be identified by the gram staining because of the
(A) Plasma membrane has peptidoglycons
(B) Cell wall have more lipids compared to peptidoglycon
(C) Cell membrane has more fatty acids
 (D) Cell wall have more peptidoglycon compared to lipids
41. Growth in broth cultures occurs mainly in the form of
(A) Sediment (B) Viscous
 (C) Heavy surface pellicle (D) Slightly turbid
42. Which of the following is not a physical method for selection of pure culture?
(A) pH of the media (B) Cell size and motility
(C) Heat treatment (D) Use of dilute media
43. The ability of the lenses to show the details of object lying between two points is known as
(A) Magnification (B) Resolving power
(C) Numerical aperture (D) Optical increase

44. Match the following :

- | | |
|-----------------|---------------|
| (a) HIV | 1. Bats |
| (b) NIPAH | 2. Mosquitoes |
| (c) LASSA | 3. Monkey |
| (d) Chikungunya | 4. Rodents |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 3 | 2 | 4 | 1 |
| <input checked="" type="checkbox"/> (B) | 3 | 1 | 4 | 2 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 2 | 1 | 3 | 4 |

45. The capacity to infect cell culture laboratory workers with unrecognized viruses

- | | |
|------------------|--|
| (A) Bioterrorism | <input checked="" type="checkbox"/> (B) Biohazards |
| (C) Bioweapon | (D) Biowar |

46. The term virulence refers to the

- | | |
|-----------------------------|--|
| (A) Number of microorganism | <input checked="" type="checkbox"/> (B) Intensity of pathogenicity |
| (C) Resistance of organism | (D) Expression of organism |

47. The Assessment of microbial diversity by the use of microarray called

- | | |
|---|------------------|
| (A) Polychip | (B) Microchip |
| <input checked="" type="checkbox"/> (C) Phylochip | (D) Phylogenesis |

48. _____ is used as a food in space-flights

- | | |
|--------------|---|
| (A) Ulva | <input checked="" type="checkbox"/> (B) Chlorella |
| (C) Mushroom | (D) Microcysties |

49. Ephedrine is a

- | | |
|--|---------------|
| (A) Steroid | (B) Flavonoid |
| <input checked="" type="checkbox"/> (C) Alkaloid | (D) Terpenoid |

50. In plant cells the middle lamella chiefly consists of
- (A) Cellulose (B) Lignin
 (C) Calcium pectate (D) Mucopolysaccharides

51. Match the following:

Characteristics of eukaryotic cells with their functions

- | | |
|-------------------|-----------------------------|
| (a) Lysosomes | 1. Protein synthesis |
| (b) Rough ER | 2. Photo synthesis |
| (c) Golgi complex | 3. Digestive enzyme storage |
| (d) Chloroplasts | 4. Secretion |

	(a)	(b)	(c)	(d)
(A)	3	1	2	4
<input checked="" type="checkbox"/> (B)	3	1	4	2
(C)	3	2	4	1
(D)	4	1	3	2

52. _____ are the ribonucleo-protein bodies in a cell.

- (A) Ribosomes (B) Golgi complex
 (C) Nucleus (D) Vacuole

53. The aggregates of calcium carbonate crystals within a plant cell is called as

- (A) Cytoplasm (B) Cystoliths
 (C) Polysome (D) Protein

54. Find out the correct answer with respect to higher plants

- I. Dictyosomes are found scattered throughout the cytoplasm
 II. Dictyosomes are localized and found between the nucleus and periphery
 III. Dictyosomes are circum-nuclear in position
 IV. Dictyosomes are polar

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

55. Which among the following is correct definition of saprophytes?
- (A) A parasitic plant that can complete its life cycle independent of a host
 - (B) A plant that is unable to synthesize a particular organic compound
 - (C) A heterotrophic plant that feeds upon other living plants
 - (D) A heterotrophic plant that feeds upon dead organic matter

56. Photosynthesis is
- (A) Catabolic process
 - (B) Anabolic process
 - (C) Amphibolic process
 - (D) Atmosphere

57. Chlororespiration occurs in
- (A) Chloroplasts
 - (B) Mitochondria
 - (C) Steroma
 - (D) Matrix

58. Fructose 6 phosphate is converted to fructose 1, 6 diphosphate by
- (A) Phosphoglycerate
 - (B) Phosphofructotinase
 - (C) Phosphatise
 - (D) Enolase

59. Consider the following Pairs

- I. Curcuma longa - Zingiberaceae
- II. Aloe vera - Cannaceae
- III. Cocos nucifera - Palmae
- IV. Cyperus rot undus - Glumaceae

Which of the pair given above is/are not correct?

- (A) I
- (B) II
- (C) III
- (D) IV

60. Ecads are
- (A) Individuals of same species with same morphological and physiological characters
 - (B) Individuals of same species with slight difference in morphology which is due to differing environment
 - (C) Individuals of same species with slight difference in morphology due to mutation
 - (D) Individuals of same species with slight difference in morphology due to different environment and the difference is irrecoverable
61. The term 'uricle' means
- (A) Circular in outline
 - (B) Provided with excrescences on surface
 - (C) Membrane sac surrounding ovary
 - (D) A narrow extension of carpes
62. Cordaitales 'do not' resemble _____ order.
- (A) Calamitales
 - (B) Cycadales
 - (C) Ginkgoales
 - (D) Cycado filicales
63. The most important Indian Fossil of Cycads is
- (A) Lyginopteris
 - (B) Rhynia major
 - (C) Williamsonia Sewardiana
 - (D) Lagenostoma Lomaxi
64. Which tree is popularly called as soapnut tree?
- (A) Myristica fragrans
 - (B) Sapindus emarginatus
 - (C) Calathea lutea
 - (D) Copernicia cerifera

65. Annual rings are distinct in plant growing in

- (A) Grass lands (B) Arctic region
(C) Tropical regions (D) Temperate regions.

66. In flowering plants, meiosis occurs at the time of

- (A) seed germination (B) formation of buds
 (C) formation of pollen grains (D) formation of root primordia

67. Double fertilization was discovered by

- (A) Leeuwenhoek (B) Nawaschin
(C) Hofmeister (D) Hooke

68. Match the following and choose the correct option given below :

- | | |
|-------------------------------|----------------------|
| (a) Pollen in Honey | 1. Melittopalynology |
| (b) Pollen in Medical aspects | 2. Iotropalynology |
| (c) Pollen in Air | 3. Aeropalynology |
| (d) Pollen in fossils | 4. Geopalynology |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| <input checked="" type="checkbox"/> (A) | 1 | 2 | 3 | 4 |
| (B) | 2 | 1 | 3 | 4 |
| (C) | 3 | 1 | 2 | 4 |
| (D) | 4 | 2 | 3 | 1 |

69. Match the following Hydrophytes :

- | | |
|-------------------------------|----------------|
| (a) Rooted floating | 1. Nymphaea |
| (b) Free floating | 2. Vallisneria |
| (c) submerged leaf needlelike | 3. Pistia |
| (d) submerged leaf complete | 4. Hydrilla |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 3 | 1 | 4 | 2 |
| <input checked="" type="checkbox"/> (B) | 1 | 3 | 4 | 2 |
| (C) | 1 | 3 | 2 | 4 |
| (D) | 3 | 1 | 2 | 4 |

70. Match the following :

- | | |
|-----------------|-----------------------|
| (a) Cladode | 1. Rhizophora |
| (b) Phyllode | 2. Ruscus |
| (c) Phylloclade | 3. Acacia melanoxylon |
| (d) Halophytes | 4. opuntia |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 3 | 2 | 4 | 1 |
| (B) | 2 | 4 | 3 | 1 |
| <input checked="" type="checkbox"/> (C) | 2 | 3 | 4 | 1 |
| (D) | 4 | 3 | 1 | 2 |

71. Introduction of foreign gene for improving genotype is called

- | | |
|-----------------------|---|
| (A) Eugenics | (B) Hybridization |
| (C) mutation breeding | <input checked="" type="checkbox"/> (D) Genetic engineering |

72. The process of genetic information flowing from DNA to RNA to proteins is called,

- | | |
|---|--------------------|
| (A) Gene mutation | (B) Gene annealing |
| <input checked="" type="checkbox"/> (C) Gene expression | (D) Gene flow |

73. Potability of water can be gauged by the presence of
 (A) *Lactobacillus bulgaricus* (B) *Enterobacter aerogens*
 (C) *Clostridium botulinum* (D) *Helicobacter pylori*
74. _____ product is produced by *Rhizopus nigricans*.
 (A) Fumaric acid (B) Citric acid
 (C) Lactic acid (D) Gibberellic acid
75. Addition of easily metabolizable organic matter to speed up the process of biodegradation is called
 (A) Anabolism (B) Cannibalism
 (C) Metabolism (D) Cometabolism
76. What are Piezophilic microbes?
 (A) Microbes growing in high temperature
 (B) Microbes growing in low temperature
 (C) Microbes growing in high atmospheric pressure
 (D) Microbes growing in low atmospheric pressure

77. Match the following:

Mycorrhizal types	Associated fungal function
(a) Ectomy corrhiza	1. Nutrient up take and mineralization of organic matter
(b) Arbuscular	2. Nutrient up take and transfer
(c) Ericaceous	3. Nutrient up take and seed aggregation
(d) Ectendomycorrhizae	4. Mineralization of organic matter only

	(a)	(b)	(c)	(d)
(A)	1	2	3	4
(B)	2	1	3	4
(C)	4	2	1	3
<input checked="" type="checkbox"/> (D)	2	3	4	1

78. There are several environmental factors that may cause damage during the prenatal period and affect the child's development. These factors are collectively referred as
(A) ✓ Teratogene (B) Hormones
(C) Nicotine (D) Radiation
79. Which of the following is the method of studying growth?
(A) Longitudinal method (B) Cross-sectional method
(C) ✓ Both (A) and (B) (D) Neither (A) nor (B)
80. Father of American forensic Anthropology
(A) ✓ Thomas Dwight (B) G.A. Dorsey
(C) Paul Stevenson (D) T.D. Stewart
81. A.C. Haddon divided India into how many geographical regions?
(A) ✓ Three (B) Four
(C) Five (D) Six
82. Who among the following traced Six major racial strains and Nine sub types among the modern Indian Population.
(A) A.C. Haddon (B) Von Eickstedt
(C) ✓ B.S. Guha (D) H.H. Risley
83. Cri-du-chat syndrome is due to
(A) ✓ Deficiency in chromosome Number 5
(B) Dublication in chromosome Number 5
(C) Inversion in Chromosome Number 5
(D) Translocation in Chromosome Number 5
84. Trisomic condition for the chromosome no. 18
(A) ✓ Edward Syndrome (B) Patau's Syndrome
(C) Klinefelter's Syndrome (D) Turner Syndrome

85. Action Anthropology is
- (A) The study of social action
 - (B) The study of cultural behaviour of man
 - (C) The study of human activity
 - (D) The study related to applied anthropology
86. Who is the author of the book, "History of Ethnological theory"?
- (A) E.B. Tylor
 - (B) Robert H. Lowie
 - (C) Dell Hymes
 - (D) Franz Boas
87. Medical / Nutritional anthropology is an area of study of
- (A) Social – Cultural anthropology
 - (B) Biological anthropology
 - (C) A common ground with both social and biological Anthropology
 - (D) An exclusive independent branch of Anthropology
88. Development Anthropology
- (A) Is a branch of applied Anthropology
 - (B) An area of specialization in economic anthropology
 - (C) An independent specialized branch of social anthropology
 - (D) None of the above
89. The definition of Health i.e. "Health is a state of complete Physical, Mental and Social well being and not merely the absence of diseases infirmity" was given by
- (A) UNO
 - (B) WHO
 - (C) ICMR
 - (D) UNESCO
90. The pedigree of the informant is traced in which technique
- (A) Genealogical technique
 - (B) Case history technique
 - (C) Descriptive technique
 - (D) Narrative technique

91. According to A.L. Kroeber, 'Eidos' means
(A) The aggregate of cultural constituents
(B) The cognitive processes operative within a culture
(C) The formal appearance of a culture derived from its constituents
(D) The emotional emphasis of a culture
92. Anthropologists rely on field work to
(A) Describe and explain diverse cultures
(B) Study how people think rather than how they behave
(C) Avoid having to test hypothesis
(D) All of the above
93. In Greek 'ethnos' means
(A) a people
(B) a group
(C) a community
(D) a folk
94. Sry gene is
(A) Y Chromosome sex determinant
(B) Sex determining region of the X chromosome
(C) X chromosome sex determinant
(D) Z chromosome sex determinant
95. Acrylamide used in electrophoresis technique is a
(A) Polymer
(B) Tetramer
(C) Isomer
(D) Monomer
96. The diluting fluid used for diluting blood for RBC enumeration
(A) Haeyem's solution
(B) Glacial acetic acid
(C) Fehling solution
(D) Benedict's solution

97. Select the correct answer from the following:

Malarial fever is caused by

- I. Anopheles culicifacies
- II. Anopheles Stephensi
- III. Culex fatigans
- IV. Aedes aegypti

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

98. Which of the steroid hormone does not contain receptors at nucleus?

- (A) Aldosterone
- (B) Estrogen
- (C) Progesterone
- (D) Glucocorticoid

99. An inflammation occurs in the wall and lining of the urinary bladder shows the symptom of disease called

- (A) Cystitis
- (B) Nephritis
- (C) Calculi
- (D) Metabolic alkalosis

100. Which of the following organ is formed during 5th day of incubation of chick?

- (A) Feathers
- (B) Beak
- (C) Heart
- (D) Functional Metanephron

101. Snakes are classified under the subclass

- (A) Synapsida
- (B) Anapsida
- (C) Diapsida
- (D) Parapsida

102. The number of human chromosomes was first reported by _____.

- (A) Tjio and Levan
- (B) Moorhead et. al.
- (C) Painter
- (D) Winiwarter

103. Identify the correct sequence of larval stages in *Penaeus*

- (A) Mysis, Nauplius, Zoea, Mysis
- (B) Protozoa, Nauplius, Zoea, Mysis
- (C) Metanauplius, Nauplius, Zoea, Mysis
- (D) Nauplius, Metanauplius, Zoea, Mysis

104. Match List I with List II and select the correct answer using the codes given below the lists

List I		List II	
(a) Barium Carbonate		1. Animal origin	
(b) Organophosphorus		2. Plant origin	
(c) Rotenoids		3. Organic compound	
(d) Nereistoxin		4. Inorganic compound	

	(a)	(b)	(c)	(d)
<input checked="" type="checkbox"/> (A)	4	3	2	1
(B)	4	3	1	2
(C)	4	1	2	3
(D)	3	4	1	2

105. Identify the muscles which is not associated with poison apparatus of snake

- (A) Digastric muscle
- (B) Sphenopterygoid muscle
- (C) Temporalis muscle
- (D) Intercostal muscle

106. The first organism to have the complete genome sequence was _____.

- (A) *Escherichia coli*
- (B) *Drosophila melanogaster*
- (C) *Haemophilus influenzae*
- (D) *Saccharomyces cerevisiae*

107. The average cranial capacity of *Homo erectus pekinesis* was _____.

- (A) 660 C.C.
- (B) 900 C.C.
- (C) 1075 C.C.
- (D) 1450 C.C.

108. Point out the wrong statements:

Statement:

- I. The average number of blood platelets is 200,000 to 300,000 per cubic millimeter
- II. Eosinophils constitute 2-4 percent of leucocytes
- III. Size of basophils vary from 8 to 10 μ
- IV. Neutrophils constitute 8-10 percent of leucocytes

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

109. Which of the following is not correctly matched.

- (A) Oxytocin - Parturition
- (B) Oxytocin - Expulsion of foetus
- (C) Oxytocin - Control bleeding in the gastric region
- (D) Oxytocin - Induce uterine contraction

110. Respiration in arachnids is affected by

- (A) gill books
- (B) booking
- (C) gills
- (D) trachea

111. The middle piece of human sperm is surrounded by a peripheral layer of cytoplasm called _____

- (A) Axoplasm
- (B) Manchette
- (C) Protoplasm
- (D) thick fibre

112. Hart man's sign occurs during

- (A) Ovulation
- (B) Gestation
- (C) Partorition
- (D) Spermiation

113. The diluting fluid used for the white blood cells counting contains _____ to destroy Red Blood cells.
- (A) Acetic Acid (B) Sodium chloride
(C) Sodium sulphate (D) Mercuric perchloride
114. The precursor to melatonin is
- (A) serotonin (B) tryptophan
(C) N-acetyl transferase (D) inhibin
115. Paternity test is based on
- (A) Protein sequencing (B) Cryopreservation
(C) Monoclonal antibodies (D) DNA profiling
116. *Helicobacter pylori* infection causes _____ in human.
- (A) Hiatushernia (B) Peptic ulcer
(C) Diarrhoea (D) Jaundice
117. Central cotton research institutes is located
- (A) Chennai (B) Bangalore
(C) Mumbai (D) Nagpur
118. The science that deals with periodic phenomena in living organisms, and their adaptation to solar and lunar related rhythms are called
- (A) Physiology (B) Anthropology
(C) Endocrinology (D) Chronobiology
119. Maltose is composed of
- (A) 2α -D-glucose
(B) α -D-glucose and β -D-fructose
(C) β -D-galactose and β -D-glucose
(D) 2β -D-fructose

120. Which of the following statement on aminoacid are correct
- (i) Amino acids are Amphoteric compounds
 - (ii) Glycine is an optically active compound
 - (iii) Amino acid possessing positive and negative charges are Zwitterions
 - (iv) pH at which amino acid has no tendency to move either to positive or negative electrode is ISO electric point.
- (i), (iii) and (iv) are correct (B) (i), (ii) and (iv) are correct
 (C) (ii) and (iii) are correct (D) (i) and (iv) are correct
121. The aminoacid which contains sulphur in aliphatic side chain.
- (A) Aspartic acid
 - (B) Cysteine
 - (C) Histidine
 - (D) Citrulline
122. RNAase P is involved in which of the following biochemical reaction.
- (A) RNA splicing
 - (B) RNA cleavage and ligation
 - (C) RNA phosphorylation
 - (D) RNA aminoacylation
123. Hoogsteen pairing allows the formation of
- (A) Triplex DNA's
 - (B) Tetraplex DNA's
 - (C) Quadruplex DNA's
 - (D) Cross shaped DNA
124. Polyadenylate sequences (Poly A) are found at the
- (A) 3' end of prokaryotic mRNA
 - (B) 5' end of prokaryotic mRNA
 - (C) 3' end of eukaryotic mRNA
 - (D) Both (A) and (C) are correct
125. To which arm of the tRNA, molecule the aminoacids are attached.
- (A) Anticodon arm
 - (B) TΨC arm
 - (C) D arm
 - (D) Acceptor arm

126. Which of the following hormone is an amino acid derivative
- (i) epinephrine
 - (ii) norepinephrine
 - (iii) thyroxine
- (A) (i), (ii) and (iii) (B) (ii) and (iii)
(C) (iii) alone (D) (i) and (ii)
127. Which of these hormones are antagonistic to action of parathormone secreted from the parathyroid gland?
- (A) glucagon (B) calcitriol
 (C) calcitonin (D) cholecystokinin
128. Biotinylated antibodies are used to capture avidin or streptavidin in which of the following technique.
- (A) ELISA (B) RIA
(C) Dot blot (D) Autoradiography
129. The proof reading ability of Taq polymerase is
- (A) 5' to 3' exonuclease activity (B) 3' to 5' exonuclease activity
(C) 3' to 5' endonuclease activity (D) 5' to 3' endonuclease activity
130. Separation of proteins by gel electrophoresis is based on
- (A) migration rates in a charged electric field
 (B) Relative size of the protein
(C) Hydrophobicity of proteins
(D) Distribution coefficient
131. Carcinogens can be detected by which of the following test
- (A) Comet Assay (B) Ames Test
(C) Pyrosequencing (D) Tuberculin Test

132. An immunoglobulin produced in large quantities during secondary immune response
- (A) IgE (B) IgA
 (C) IgM (D) IgG

133. In human, MHC proteins are encoded by a cluster of genes located in chromosome
- (A) 17 (B) 16
 (C) 6 (D) 5

134. Match the following nature of Urine specimen with their respective crystals.

Urine sample	Crystals present
(a) Normal Alkaline Urine	(i) Calcium oxalate
(b) Abnormal Urine	(ii) Ammonium Biurate
(c) Normal Acidic Urine	(iii) Sulphonamide
	(iv) Epithelial Casts

- | | | | |
|---|-------|-------|-------|
| | (a) | (b) | (c) |
| <input checked="" type="checkbox"/> (A) | (ii) | (iii) | (i) |
| (B) | (iv) | (ii) | (i) |
| (C) | (iii) | (ii) | (iv) |
| (D) | (ii) | (i) | (iii) |

135. When fully saturated with oxygen each gram of haemoglobin contains
- (A) 1.34 ml of O₂ (B) 1.42 ml of O₂
 (C) 0.34 ml of O₂ (D) 13.4 ml of O₂

136. The lumbar puncture needle for collection of cerebrospinal fluid measures
- (A) 5 – 6 cm (B) 10 – 12 cm
 (C) 15 – 20 cm (D) 7 – 8 cm

137. Rust coloured sputum is seen in
- (A) Pneumococcal pneumonia (B) Acute cardiac infarction
 (C) Pulmonary infarction (D) Neoplasm invasion

138. In the disease Q Fever, the Q stands for _____.
- (A) Query (B) Question
(C) Quick (D) Quarternary
139. "The phenomenon in which plant tissues infected with one strain of a virus are protected from infection by other strains of the same virus" is called.
- (A) Immunization (B) Systemic Acquired Resistance
 (C) Cross protection (D) Hyper sensitivity
140. Pure culture technique was introduced by
- (A) Louis Pasteur (B) Alexander Flemming
(C) Waksman (D) Robert Koch
141. Which one is not a contribution of Louis Pasteur
- (A) "Life begets Life" (B) Antibiotics
(C) Pasteurization (D) Vaccination
142. _____ are the intentional introduction of biological agents into food, water, to a group of individuals.
- (A) Biogas (B) Bio weapons
(C) Biological oxidation (D) Bio crimes
143. The weaponization and purposeful transmission of human pathogens is called
- (A) Bioluminescence (B) Biohazards
 (C) Bioterrorism (D) Biomagnification

144. Bryophyte named "moss cotton" is
 (A) Sphagnum (B) Porella
 (C) Jungermannia (D) Frullania
145. Calcicoles Bryophyte is
 (A) Polytrichum (B) Tortell tortusa
 (C) Leucobryum glaucum (D) Rhacomitrium
146. The organ which 'does not' play a role in attachment of lichens
 (A) Mapter (B) Blastidia
 (C) Medullary hyphae (D) Hypothallus
147. Annulus is present in the sporangium of
 (A) Salvinia (B) Rhynia
 (C) Adiantum (D) Cycas
148. 'Evosin' is derived from
 (A) Actinomycetes (B) Bacteria
 (C) Fungi (D) Lichen
149. 'Chasmolithic' algae occur
 (A) in desert soil surface
 (B) on lower surface of stones on desert soil
 (C) in the rock fissures in desert soil
 (D) penetrating rocks in desert soil
150. Which one of the following is not a component of cytoskeleton?
 (A) Actin filaments (B) Microtubules
 (C) Intermediate filaments (D) Plasmodesmata

151. "Hydrolytic enzymes" are stored in

- (A) Chloroplast (B) Nucleus
(C) Chromoplasts ~~(D) Lysosomes~~

152. How many forms of rust attack wheat in India?

- (A) 2 ~~(B) 3~~
(C) 4 (D) 5

153. Active invasion of pathogen within host is by

- (A) Bacteria ~~(B) Fungi~~
(C) Viruses (D) Mycoplasmas

154. Match the list - I with list - II and select the correct answer from the codes given below

List I				List II			
(a)	Pentose phosphate pathway			1.	Krantz anatomy		
(b)	C4 plants			2.	Co enzyme		
(c)	Kleptoplasty			3.	Hexose monophosphate shunt		
(d)	Flavin Adenine Dinucleotide			4.	Stolen plastid		
(a)	(b)	(c)	(d)				
(A)	1	3	4	2			
(B)	3	1	2	4			
(C)	3	1	4	2			
(D)	3	4	2	1			

155. The word Enzyme, literally means

- ~~(A)~~ in yeast (B) in Bacteria
(C) in Fungi (D) in life

156. In general, unfavourable growth conditions will _____ respiration.

- ~~(A)~~ Increase (B) Decrease
(C) Cutshort (D) Incomplete

157. Which of the following is correctly matched suffix?

- I. class - opsida
- II. order - ineae
- III. suborder - ales
- IV. sub. family - aceae

- (A) I (B) II
(C) III (D) IV

158. Match the following :

The sub families of Leguminosae is divided as

- | | |
|----------------------|---|
| (a) Mimosoidae | 1. Zygomorphic ascending aestivation |
| (b) Caesalpinioideae | 2. Zygomorphic – descending aestivation |
| (c) Papilionoidae | 3. actinomorphic – valvate aestivation |

- | | | | |
|---|-----|-----|-----|
| | (a) | (b) | (c) |
| (A) | 3 | 2 | 1 |
| (B) | 2 | 3 | 1 |
| (C) | 1 | 3 | 2 |
| <input checked="" type="checkbox"/> (D) | 3 | 1 | 2 |

159. The Central National Herbarium is located at

- (A) Kolkatta (B) Mumbai
(C) Delhi (D) Chennai

160. Which of the following is correctly matched?

- I Plant worshiped by Tribals – Ocimum
- II Tribals Antidote plant – Mangifera
- III Tribals sacred glove plant – Achyranthes
- IV Tribals edible plant – Acorus

- (A) I (B) II
(C) III (D) IV

161. Which of the following is a Pseudocereal?

- (A) Fagopyrum esculentum (B) Zea mays
(C) Triticum aestivum (D) Oryza sativa

162. Which one of the following yields resin, timber and pulp?

- (A) Dalbergia (B) Pinus
(C) Eucalyptus (D) Quercus

163. The seed coat developing from the

- (A) Embryo Sac (B) Obturator
 (C) Integuments (D) Nucellus

164. Select the correct answer from the following

The Pericarp differentiated in to

- I exocarp, mesocarp and endocarp
- II exocarp and epicarp
- III exocarp and mesocarp
- IV exocarp and endocarp

- (A) I (B) II
(C) III (D) IV

165. Match the List - I with List - II and choose the correct answer from the options given below :

List - I

List - II

- | | |
|--------------------------|--------------------------|
| (a) Double fertilization | 1. Richard Evans Schuler |
| (b) Polyembryony | 2. Haberlandt |
| (c) Plant tissue culture | 3. Nawaschin |
| (d) Ethnobotany | 4. Anton Van Leewenhoek |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 1 | 4 | 2 | 3 |
| (B) | 3 | 4 | 1 | 2 |
| <input checked="" type="checkbox"/> (C) | 3 | 4 | 2 | 1 |
| (D) | 3 | 2 | 1 | 4 |

166. The Pollen grains tablets have been used in the treatment of

- | | |
|--------------|---|
| (A) Jaundice | (B) Brain fever |
| (C) Ulcer | <input checked="" type="checkbox"/> (D) Prostatitis |

167. Phylloclade is a _____ adaptation in xerophytes.

- | | |
|-------------------|---|
| (A) Anatomical | <input checked="" type="checkbox"/> (B) Morphological |
| (C) Physiological | (D) Embryological |

168. Point out the correct statement

- | | |
|---|-------------------|
| (1) Mangroove trees are halophytes | |
| (2) Mangroove trees exhibit pneumatophores | |
| (3) Mangroove trees have only +ve geotropic tap roots | |
| (4) Some Mangroove trees exhibit vivipary | |
| (A) 1,2 correct | (B) 1,2,3 correct |
| <input checked="" type="checkbox"/> (C) 1,2,4 correct | (D) 2,3,4 correct |

169. When linked characters on genes are inherited together through two or more generations, it is called
- (A) Complete linkage (B) Continuous linkage
 (C) Consistent linkage (D) Incomplete linkage
170. If a gene is represented in an infinitely large random-mating population by adaptively neutral alleles, A and a, in the ratio of " $pA : (1 - p)a = 1$ " is known as
- (A) Stanford – Suneson law (B) Weibe – Thomas law
 (C) Brigg's – Harlan law (D) Hardy – Weinberg law
171. The Mutagenic effect of X – rays was demonstrated for the first time in Drosophila by
- (A) H. J. Muller (B) C. Auerbach
 (C) W. R. Singleton (D) A. Gustafsson
172. The mutations study was proposed by
- (A) T. H. Morgan (B) L.J. Stadler
 (C) Albenburg (D) C. Auerbach
173. "BKM – DNA" is associated with
- (A) Next Generation Sequencing (B) DNA finger printing
 (C) Gene regulation (D) Gene cloning
174. Gene recombinant technology is used for
- (A) vectorless gene transfer into target cell
 (B) vector based gene transfer into target cell
 (C) direct transfer of DNA protein complex
 (D) liposome base direct gene transfer into target cell.

175. Monoclonal antibodies can be produced in specialized cells through
 (A) Hybridoma technology (B) Colorimetric techniques
(C) Electrophoresis techniques (D) Electroporation
176. *Azospirillum* can be isolated from plant
(A) stem (B) leaf
 (C) roots (D) node
177. Which among the following Bryophyte is popularly called "Bog moes"?
(A) *Anthoceros* (B) *Polytrichum*
(C) *Funaria* (D) *Sphagnum*
178. Which is incorrect in the following sentence
(A) Monoclonal Antibodies are highly specific
(B) Monoclonal Antibodies are useful
 (C) Monoclonal Antibodies can be produced only in less quantities
(D) Monoclonal Antibodies are uniform
179. Identify the Shine-Dalgarno sequence
 (A) AGGAGGU (B) AGAGGUA
(C) AAGGUAA (D) AUGAUGC
180. The theory of evolution indicates that
(A) Man evolved from monkeys
(B) Monkeys evolved from man
(C) Man evolved from dinosaurs
 (D) Man and Apes had a common ancestor
181. Development of human body is
(A) Directional (B) Non directional
 (C) Multi directional (D) Bi-directional

182. Measurement of the living body including head and face comes under the perview of
(A) Osteometry (B) Somatometry
(C) Craniometry (D) None of the above
183. Cambridge Expedition to Torres straits field work was done by
(A) Haddon (B) Rivers
(C) Seligman (D) All of the above
184. Who among the following established participation as an important technique of fieldwork?
(A) Herskovits (B) Rivers
(C) Seligman (D) Malinowski
185. Who among the following has advised "see as much as you can, participate whenever you are permitted to do so, and compound your experiences by discussing them formally with natives as widely as you are able".
(A) B. Malinowski (B) A.R. Radcliffe Brown
(C) H.J. Herskovits (D) A.C. Haddon
186. E. E. Evans Pritchard did field work among
(A) Myer of East Africa (B) Azande of East Africa
(C) Both (A) and (B) (D) Andaman Islanders
187. Hypothesis testing is called
(A) Deductive research (B) Inductive research
(C) Both (A) and (B) (D) None of the above

188. The phenomenon of ecdysis takes place in
(A) birds (B) insects
(C) mammals (D) polychaetes
189. The ovum which has been fertilized is called as
(A) Zygote (B) Inner cell mass
(C) Female pronucleus (D) Blastocyst
190. The organs which are functionless and atrophied are called as
(A) Vestigial organs (B) Homologous organs
(C) Analogous organs (D) Artificial organs
191. The process which accomplishes the egg to start the cleavage is
(A) Amphimixis (B) Fertilization
(C) Capacitation (D) Acrosome reaction
192. The Father of biological taxonomy is
(A) Aristotle (B) Pluto
(C) Thesphrastus (D) Albertus Magnus
193. The polypeptide chains of immunoglobulins are linked by
(A) trisulphide bridges (B) disulphide bridges
(C) dihydrogen bond (D) Covalent bond
194. A local thickening of the epiblast after being laid is called
(A) Endoblast (B) Primitive streak
(C) Koller's spot (D) Koller's sickle

195. Which among the following is considered important for the social-cultural anthropologists?
- (A) The memoir interview (B) The interview with prisoners
(C) The psychoanalysis (D) All of the above
196. Intensive observation denotes
- (A) An in-depth observation on small closed community
(B) Observation on a large field
(C) An observation on large community
(D) All of the above
197. Who has said to have coined the term 'anthropologist'?
- (A) Aristotle (B) Plato
(C) Socrates (D) Descartes
198. Which among the following discipline is concerned with man of all times and of all places?
- (A) Botany (B) Anthropology
(C) Zoology (D) Geology
199. How does anthropology differ from other social sciences?
- (A) It is holistic and integrative in its approach
(B) It uses statistics much effectively
(C) It gives generalizations of social reality
(D) It predicts the future of the human culture
200. Which of the following best describe how anthropologists primarily learn new information about humans?
- (A) Field work (B) Laboratory experiments
(C) Reading travelers accounts (D) Analysing missionary reports

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