

# M.Phil./Ph.D. ADMISSION TEST, 2018

## Paper II

### Subject : 145 - Zoology

Roll No. (In figures) ..... (In words) .....

OMR Sheet Sr. No. ....

Signatures of Invigilators 1. .... 2. ....

Names of Invigilators 1. .... 2. ....

Time : 2 Hours

Max. Marks : 200

### GENERAL INSTRUCTIONS

1. Read the instructions given on the Question Booklet and OMR Sheet before starting the answers. All the entries should be filled by **blue or black ball point pen**.
  2. The Question Booklet contains **100** questions and all questions are compulsory.
  3. Each question is of **2** marks. There is **no negative marking**.
  4. Candidates must ensure that the Question Booklet issued to them has all the questions. Defective Question Booklet can be got changed within **10** minutes.
1. प्रश्नों के उत्तर लिखने से पूर्व प्रश्न-पुस्तिका और ओ.एम.आर. शीट पर दिये हुए निर्देश पढ़ें। सभी प्रविष्टियाँ नीले अथवा काले बॉल पॉइन्ट पेन से भरें।
  2. प्रश्न-पुस्तिका में **100** प्रश्न हैं और सभी प्रश्न अनिवार्य हैं।
  3. प्रत्येक प्रश्न **2** अंक का है। कोई नकारात्मक अंकन (negative marking) नहीं होगा।
  4. परीक्षार्थी सुनिश्चित कर लें कि उन्हें जो प्रश्न-पुस्तिका गई है उसमें सभी प्रश्न अंकित हैं। त्रुटिपूर्ण प्रश्न-पुस्तिका 10 मिनट की अवधि में बदलवाई जा सकती है।

5. In case of any discrepancy between English and Hindi versions of a question, English version will be taken as correct, wherever there are both versions.
  6. Select and darken the circle corresponding to the answer [(A) or (B) or (C) or (D)] in OMR sheet.
  7. In case more than one circles are darkened in a question, it will not be evaluated.
  8. Do not make any stray marks on OMR sheet and do not fold it.
  9. Any candidate found removing pages from the Question Booklet may be disqualified and prosecuted.
  10. Use of unfair means will disqualify the candidate from the examination.
  11. Cell phone, calculator or any such devices are not allowed in the Examination Hall.
  12. No candidate is allowed to leave the seat before handing over the original OMR sheet to the invigilator. Candidate can take Question Booklet and Carbon copy of OMR sheet.
5. किसी प्रश्न के अंग्रेजी और हिन्दी रूपान्तरणों में भिन्नता होने की स्थिति में अंग्रेजी रूपान्तरण सही माना जायेगा जहाँ प्रश्न-पत्र दोनों भाषाओं में है।
  6. सही उत्तर का चयन करें तथा सम्बन्धित [(A) अथवा (B) अथवा (C) अथवा (D)] गोले को ओ.एम.आर. शीट में काला करें।
  7. किसी प्रश्न में एक से अधिक गोले को काला करने पर उसे जाँचा नहीं जायेगा।
  8. ओ.एम.आर. शीट पर किसी तरह का चिह्न न बनायें और न ही उसे मोड़ें।
  9. प्रश्न-पुस्तिका से पृष्ठ निकालते हुए पाये जाने पर परीक्षार्थी को अयोग्य घोषित किया जा सकता है और उसके विरुद्ध विधिक कार्यवाही भी की जा सकती है।
  10. अनुचित साधनों का उपयोग करने पर परीक्षार्थी को परीक्षा के लिए अयोग्य घोषित कर दिया जायेगा।
  11. सेलफोन, संगणक और ऐसी किसी भी अन्य प्रविधियों को परीक्षा भवन में लाने की अनुमति नहीं है।
  12. ओ.एम.आर. शीट की मूल प्रति वीक्षक को सुपुर्द किये बिना किसी भी परीक्षार्थी को अपना स्थान छोड़ने की अनुमति नहीं है। परीक्षार्थी प्रश्न-पुस्तिका एवं ओ.एम.आर. शीट की कार्बन प्रति को अपने साथ ले जा सकेगा।

1. Reverse transcriptase is a useful enzyme to have when :
  - (A) aRNA virus converts its RNA to DNA
  - (B) There are no host cells present
  - (C) Nutrients are scarce
  - (D) Spikes are forming in the new virus
  
2. Which of the following viruses has **not** been associated with human cancer ?
  - (A) Hepatitis C virus
  - (B) Varicella - Zoster virus
  - (C) Hepatitis B virus
  - (D) Herpes simplex virus type 2
  
3. Which of the following pair of diseases is caused by virus ?
  - (A) Rabies, Measles
  - (B) Typhoid, Tetanus
  - (C) Cholera, Tuberculosis
  - (D) AIDS, Syphilis
  
4. The scientific name is in which Language :
  - (A) Latin
  - (B) Greek
  - (C) Spanish
  - (D) English
  
5. The genetic material in HIV is :
  - (A) ds DNA
  - (B) ss DNA
  - (C) ss RNA
  - (D) None of these
  
6. The 'Suicidal' bag of an animal cell is :
  - (A) Spherosome
  - (B) Dictyosome
  - (C) Lysosome
  - (D) Endosome
  
7. A histogram can be prepared by using \_\_\_\_\_ along the X axis.
  - (A) Class intervals
  - (B) Standard deviation
  - (C) Median
  - (D) Mode
  
8. The genetic material of Si RNA is :
  - (A) ds DNA
  - (B) ss DNA
  - (C) ds RNA
  - (D) None of these
  
9. Which one of the following mutagens act only on replicating DNA ?
  - (A) Ethidium bromide
  - (B) Nitrosoguanidine
  - (C) Acridine orange
  - (D) None of the above
  
10. What is the full form of ANOVA ?
  - (A) Analysis of variance
  - (B) Anatomical ovarian assessment
  - (C) Analytical over assessments
  - (D) None of the above
  
11. In which medium the hydridoma cells grow selectively ?
  - (A) Polyethylene glycol
  - (B) Hypoxanthine aminopterinthyminine
  - (C) Hypoxathing - guaningphosphoribosyltransferase
  - (D) Both (B) and (C)
  
12. DNA is present in :
  - (A) Nucleus only
  - (B) Nucleus, mitochondria and ER
  - (C) Nucleus, mitochondria and chloroplast
  - (D) Nucleus, mitochondria and RER

13. Chromatin is composed of :
- Nucleic acids and protein
  - Nucleic acids only
  - Proteins only
  - None of these
14. According to Chargaff's rule, the following proportion exists in DNA :
- $C = G$
  - $C > T$
  - $C > G$
  - $C = T$
15. In nucleic acids, the free hydroxyl group is attached to the carbon of the sugar.
- 5'
  - 4'
  - 3'
  - 1'
16. Full form of PCR.
- Polymer Chain Refrigeration
  - Polymerase Composed Reaction
  - Polymerase Chain Reaction
  - Polymer Composed Refrigeration
17. Mutagenicity of a compound can be tested by :
- ELISA
  - AME'S TEST
  - WESTERN BLOT
  - SDS GEL CHROMATOGRAPHY
18. Full form of HPLC.
- High Pressure Laser Chromatography
  - High Power Liquid Chromatography
  - High Pressure Liquid Chromatography
  - High Power Liquid Column
19. Thin layer chromatography works on :
- Partition principle, adsorption
  - Adsorption principle, affinity
  - Ion exchange principle
  - Affinity principle
20. In the emission spectrum Infrared zones have :
- Short wavelength
  - Long wavelength
  - Visible range
  - None of the above
21. Vitamin which is useful in Cancer is \_\_\_\_\_.
- Vitamin A
  - Vitamin D
  - Vitamin C
  - Vitamin K
22. Effect on substrate concentration by enzyme is estimated by \_\_\_\_\_ equation.
- Michaelis - Menten Equation
  - Lineweaver - Burke Equation
  - Linear Equation
  - Hanes - Woolf Equation
23. An essential for converting glucose to glycogen is \_\_\_\_\_.
- Glucose-1-Phosphatase
  - GTP
  - ATP
  - Lactic acid
24. Uracil and Ribose form \_\_\_\_\_.
- Ribonucleoside uridine
  - Ribonucleotide uridine
  - Ribonucleoside uracil
  - Ribonucleotide uracil
25. In operon concept, protein is a \_\_\_\_\_.
- Activator proteins
  - Repressor proteins
  - Promoter proteins
  - Regulatory proteins
26. Ions with both negative and positive charges are called \_\_\_\_\_.
- Anions
  - Cations
  - Zwitterions
  - All of the above

27. Bt stands for \_\_\_\_\_.
- (A) *Bacillus thuringiensis*  
 (B) BitTorrent computing  
 (C) British telecommunications  
 (D) Bluetooth computing
28. tRNAs are made by \_\_\_\_\_ in a cell.
- (A) Nuclear chromosomes  
 (B) Mitochondrial DNA  
 (C) Golgi bodies  
 (D) Lysosomes
29. Northern Blotting is for separating \_\_\_\_\_ molecules.
- (A) DNA  
 (B) RNA  
 (C) Proteins  
 (D) All of the above
30. Full form of SNPs is \_\_\_\_\_.
- (A) Simple Nucleotide Polymorphisms  
 (B) Smooth Nucleotide Polymorphisms  
 (C) Single Nucleotide Polymorphisms  
 (D) Sized Nucleotide Polymorphisms
31. The energy for polymerisation of tubulin is provided by \_\_\_\_\_.
- (A) ATP hydrolysis  
 (B) GTP hydrolysis  
 (C) Glucolysis  
 (D) Glycogen
32. C-banding techniques are for localizing \_\_\_\_\_ regions on chromosomes.
- (A) Heterochromatin  
 (B) Euchromatin  
 (C) Light bands  
 (D) Dark bands
33. Apoptosis does not occur in \_\_\_\_\_ cells.
- (A) Alzheimer's disease  
 (B) Parkinson's disease  
 (C) Diabetes  
 (D) Cancer
34. What substance do pancreas release to neutralize any acid that may come out of stomach ?
- (A) Bicarbonate  
 (B) NaCl  
 (C) Phosphate  
 (D) Chloride
35. Which factors are activated by thrombin in clotting mechanism pathway ?
- (A) XI, VIII, X  
 (B) XI, XIII, V  
 (C) V, X, VII  
 (D) IX, VIII, V
36. How many times during breathing, at rest the average adult inhales and exhales ?
- (A) About 10 times a minute  
 (B) About 20 times a minute  
 (C) About 15 times a minute  
 (D) About 12 times a minute
37. Tidal volume is :
- (A) Amount of air that can be exhaled after normal exhalation (ERV)  
 (B) Amount of air that can be further inhaled after normal inhalation (IRV)  
 (C) Maximum amount of air that can be moved in or out of the lungs in single respiratory cycle (VC)  
 (D) Amount of air inhaled during a normal breath
38. What channels in the presynaptic membrane open in response to an action potential ?
- (A) Voltage gated calcium and potassium channels  
 (B) Voltage gated sodium and calcium channels  
 (C) Voltage gated sodium and potassium channels  
 (D) Voltage gated sodium and magnesium channels
39. Function of ADH is to \_\_\_\_\_.
- (A) increase water absorption  
 (B) decrease water absorption  
 (C) control sugar level in blood  
 (D) synthesize salt

40. Which part of nephron is impermeable to salt ?  
 (A) DCT  
 (B) Collecting ducts  
 (C) Ascending limb of loop of Henle  
 (D) Descending limb of loop of Henle
41. In the pentose phosphate pathway Ribose-5-phosphate is formed from \_\_\_\_\_.  
 (A) reaction of fructose-6-phosphate and glyceraldehyde-3-phosphate  
 (B) isomerization of ribulose-5-phosphate  
 (C) reaction of xylulose-5-phosphate and erythrose-4-phosphate  
 (D) none of the above
42. The gradual decrease in the ability to maintain skeletal and skeletal muscle function and mass is known as :  
 (A) Sarcopenia  
 (B) Cachexia  
 (C) Schizophrenia  
 (D) None of the above
43. The colour of the eye of a person will depend upon the particular pigment present in the :  
 (A) Cornea  
 (B) Choroid  
 (C) Pupil  
 (D) Iris
44. On obstruction of pancreatic duct, which enzyme would have elevated blood level :  
 (A) Gastrin  
 (B) Amylase  
 (C) Cholecystokinin  
 (D) Secretin
45. Myxoedema in adults is caused due to \_\_\_\_\_.  
 (A) Deficiency of PTH  
 (B) Hyperthyroidism  
 (C) Deficiency of thyroid hormone  
 (D) Over production of PTH
46. If the vasa deferentia of a man is surgically disconnected or removed :  
 (A) The semen will be without sperms.  
 (B) Non motile sperms in semen.  
 (C) Spermatogenesis will not take place.  
 (D) Sperms without nuclei in semen.
47. During fertilisation two cells are fused, still the blastomeres of zygote contain the same number of chromosomes as in all body cells because :  
 (A) Meiosis occurs during cleavage  
 (B) Meiosis occurs during gametogenesis  
 (C) Chromosomes are absent in sperms  
 (D) Parthenogenesis occurs during gametogenesis
48. Albinism is a recessive human trait. If a normal couple produces an albino child, what is the probability that their next child will be albino ?  
 (A) 1/4  
 (B) 1/8  
 (C) 1/16  
 (D) 1/64
49. If individuals of genotype AaBbCc are intercrossed, how many different phenotypes can appear in their offspring ?  
 (A) 16  
 (B) 64  
 (C) 32  
 (D) 08
50. By which process mis-incorporated base can change into a permanent mutation ?  
 (A) Replication  
 (B) Transcription  
 (C) Translocation  
 (D) Transposition
51. Stabilizing selection favours \_\_\_\_\_.  
 (A) both extreme form of traits  
 (B) intermediate forms of traits  
 (C) environmental differences  
 (D) one extreme form over the other extreme form and over intermediate forms of a trait

52. The Animalia kingdom of five kingdom system is equivalent to the following taxon of traditional classification :
- (A) Metazoa  
(B) Metaphyta  
(C) Eumetazoa  
(D) Protista
53. Which of the characters differentiate between centipede and millipede ?
- (A) Number of legs on the trunk  
(B) Position of genital aperture  
(C) Carnivorous and nocturnal habit  
(D) All of the above
54. Which hormone triggers moulting in insects ?
- (A) Brain hormone  
(B) Prothoracic tropic hormone (PTTH)  
(C) Juvenile hormone  
(D) Eclosion hormone
55. Which is the earliest free swimming stage in the development of crustaceans ?
- (A) Nauplius larva  
(B) Zoea larva  
(C) Megalopa larva  
(D) Mysis larva
56. Which glands are modified into poison glands in snakes ?
- (A) Labial glands  
(B) Parotid glands  
(C) Submandibular gland  
(D) Sublingual gland
57. Animals having a built-in thermostat to maintain constant body temperature are known as :
- (A) Biothermic  
(B) Poikilothermic  
(C) Oligothermic  
(D) Homoiothermic
58. Hemichordata is considered as sister group of which phyla ?
- (A) Mollusca  
(B) Echinodermata  
(C) Annelida  
(D) Arthropoda
59. Y-shaped chevrons bone is found in caudal vertebrae of \_\_\_\_\_.
- (A) Sphenodon  
(B) Rana  
(C) Varanus  
(D) Fowl
60. Bartholin glands are \_\_\_\_\_.
- (A) Compound alveolar glands  
(B) Tubular glands  
(C) Epitrichial glands  
(D) Suprarenal glands
61. Foramen of panizzae is associated with \_\_\_\_\_.
- (A) Brain of Reptiles  
(B) Brain of Rabbit  
(C) Lung of Lizard  
(D) Heart of Lizard
62. A tautomeric shift causing the substitution of one for a pyrimidine is called \_\_\_\_\_.
- (A) Transversion  
(B) Translocation  
(C) Transition  
(D) Inversion
63. If a man of blood group AB marries a woman of blood group A whose father had a blood group O, what different blood groups are the children expected to belong ?
- (A) A, AB  
(B) A, AB, B  
(C) AB, O  
(D) A, O, B

64. Action of topoisomerase leads to change in \_\_\_\_\_.
- linking number of closed circular double stranded DNA
  - linking number of closed circular single stranded DNA
  - linking number of double stranded linear DNA
  - linking number of single stranded linear DNA
65. Some diseases damage the hair cells in the ear. When the damage to outer hair cells is greater than the damage to the inner hair cells?
- The perception of vertical acceleration is disrupted
  - The  $K^+$  concentration in endolymph is decreased
  - The  $K^+$  concentration in perilymph is decreased
  - The affected hair cells fail to shorten when exposed to sound
66. The gastric gland cell whose absence could lead to pernicious anaemia is the \_\_\_\_\_.
- Chief cell
  - Goblet cell
  - Mucous neck cell
  - Parietal cell
67. The energy flow in an ecosystem is :
- in any direction
  - always unidirectional
  - always bi-directional
  - always down-directional
68. Eutrophication means :
- Solid waste
  - Excessive richness of nutrients in water body
  - Thermal change in water
  - None of the above
69. The lowest temperature of air is recorded at :
- mid-night
  - just after sunset
  - just before sunrise
  - 2 a.m.
70. Ozone layer is getting depleted because of :
- excessive use of automobiles
  - excessive formation of industrial units
  - excessive use of man made compounds containing both fluorine and chlorine
  - excessive deforestation
71. Deep black soil is productive due to high proportion of :
- sand and zinc
  - gravel and calcium
  - clay and humus
  - silt and earthworm
72. Match List-I with List-II and select the correct answer from the codes given below :
- | List - I                |                   | List - II  |             |
|-------------------------|-------------------|------------|-------------|
| (National Park)         |                   | (Location) |             |
| (a) Gir                 | (i) Assam         | (i)        | Assam       |
| (b) Sundarban           | (ii) Gujarat      | (ii)       | Gujarat     |
| (c) Betta               | (iii) West Bengal | (iii)      | West Bengal |
| (d) Kaziranga           | (iv) Jharkhand    | (iv)       | Jharkhand   |
| (a)                     | (b)               | (c)        | (d)         |
| (A) (i) (iii) (iv) (ii) |                   |            |             |
| (B) (ii) (iii) (i) (iv) |                   |            |             |
| (C) (ii) (iii) (iv) (i) |                   |            |             |
| (D) (iv) (ii) (iii) (i) |                   |            |             |
73. Which of the following regions of India have been designated as biodiversity hotspots ?
- Eastern Himalaya and Western Ghat
  - Western Ghat and Eastern Ghat
  - Eastern Ghat and Western Himalaya
  - Western Himalaya and Western Ghat
74. If the organism is at very high risk of extinction according to IUCN, then it is kept in category :
- rare
  - vulnerable
  - endangered
  - critically endangered
75. Wings of insects and birds have become flat, large and streamlined. This is an example of :
- Parallel evolution
  - Divergent evolution
  - Convergent evolution
  - Co-evolution



76. The 'Adaptive radiation' refers to :
- Evolution of different species from a common ancestor
  - Power of adaptation in an individual to a variety of environments
  - Adaptations due to geographical isolation
  - Migration of members of a species to different geographical area
77. Genetic drift is found in :
- small population
  - large population with random mating
  - plant population
  - animal population
78. The adaptation related to high altitude is :
- The increase in RBC count
  - Decrease in the affinity for oxygen by haemoglobin
  - Increase in the affinity for oxygen by haemoglobin
  - The decrease in RBC count
79. Maximum diversity of reptiles was observed during :
- The Jurassic period
  - Triassic period
  - The Cretaceous period
  - The Ordovician period
80. Which one is used for knowing whether or **not** a population is evolving ?
- degree of evolution
  - genetic drift
  - proportion between acquired variations
  - Hardy Weinberg equation
81. Which of the following best describes a social behaviour ?
- One monkey grooming another
  - A predator chasing prey
  - An animal defending its territory
  - An animal hibernating
82. The part of the brain that has been shown to function like a 'Biological Clock' is the :
- Optic chiasm
  - Supra chiasmatic nucleus
  - Infra chiasmatic nucleus
  - Nucleus of the solitary tract
83. In which (amphibia) male winds the strings of eggs formed by adhesion of their gelatinous investment -round his body and hind legs ?
- Alytes obstetricans*
  - Rhacophorus reticalatus*
  - Hyla goeldii*
  - Pipa americana*
84. The supra chiasmatic nucleus influences the release of melatonin by its effect on the :
- Pineal gland
  - Pituitary gland
  - Thyroid gland
  - Hypothalamus
85. Migrants birds determine their longitude and latitude during night by :
- The position of the stars
  - The position of moon
  - The position of moon and stars both
  - None of the above
86. Honey is nector :
- obtained from flowers and stored in bee hive.
  - and pollen obtained from flowers and stored in bee hive.
  - of flowers diluted by honey bee by mixing with saliva.
  - of flowers processed by honey bee by mixing with saliva.
87. The use of living microorganisms to degrade environmental pollutants is called :
- microremediation
  - nanoremediation
  - bioremediation
  - all of these

88. The pregnancy rate occurring using a particular contraceptive method is referred to as that method's :
- Pregnancy ratio
  - Failure rate
  - Effectiveness rate
  - Effectiveness ratio
89. Fish, which eradicate the mosquito larva is :
- Gambusia
  - Rohu
  - Anabas
  - Cuttle fish
90. Spawning of fishes is induced by injecting female with :
- Progesterone
  - Prostaglandin
  - FSH and LH
  - Estrogen
91. The silkworm silk is the product of :
- salivary gland of the larva
  - salivary gland of the adult
  - cuticle of the larva
  - integument of the larva
92. The mean of a sample is :
- always equal to the mean of the population.
  - always smaller than the mean of the population.
  - computed by summing the data values and dividing the sum by  $(n - 1)$ .
  - computed by summing all the data values and dividing the sum by the number of items.
93. The student 't' test is :
- a parametric test
  - a non parametric test
  - a test for comparing averages
  - a test for comparing variances
94. Chi square ( $\chi^2$ ) test :
- measure the degree of deviation of the experimental result from the expected result
  - measure the observed frequency
  - measure the degree of deviation
  - measure the deviation of numerical data
95. If we reject the Null Hypothesis, we conclude that :
- there is enough statistical evidence to infer that alternative hypothesis is true
  - there is not enough statistical evidence to infer that the alternative hypothesis is true
  - there is enough statistical evidence to infer that the Null Hypothesis is true
  - the test is statistically significant at whatever level of significance the test was conducted at
96. Ultrastructure of cell can be best studied by :
- Transmission electron microscope
  - Autoradiography
  - Phase contrast microscope
  - Fluorescence microscope
97. The restriction enzymes are used in 'genetic engineering' because :
- they are nucleases that cut DNA at variable sites
  - they can cut DNA at specific base sequence
  - they can degrade harmful proteins
  - they can join different DNA fragments
98. Plasmid has been used as vector because :
- It is circular DNA, which has capacity to join to eukaryotic DNA
  - It has antibiotic resistance gene
  - Both ends show replication
  - It can move between prokaryotic and eukaryotic cells
99. DNA library is :
- a general collection of all genes sequenced so far
  - a DNA fragment inserted into vector
  - a collection of DNA fragments that make up the entire genome of a particular organism
  - all DNA fragments identified with a probe
100. Lambert-Beer's Law states that :
- the linear relationship between absorbance and concentration of an absorbing species.
  - the intensity of light increases with the concentration of medium.
  - it involves the transmission of light.
  - it involves the absorbance of light.

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SPACE FOR ROUGH WORK / रफ कार्य के लिये जगह

SPACE FOR ROUGH WORK / रफ कार्य के लिये जगह

