

Sikkim Public Service Commission

Written (Main) Examination for the post of Sub-Jailer

Time Allowed: 3 hours

PAPER - II
ZOOLOGY

Maximum Marks: 250

INSTRUCTIONS TO CANDIDATES

Read the instructions carefully before answering the questions: -

1. This Test Booklet consists of 8 (eight) pages and has 63 (sixty-three) printed questions.
2. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED, TORN OR MISSING PAGES OR ITEMS. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
3. Use only Black Ball Point Pen to fill the OMR Sheet.
4. Please note that it is the candidate's responsibility to fill in the Roll Number carefully without any omission or discrepancy at the appropriate places in the OMR ANSWER SHEET as well as on SEPARATE ANSWER BOOKLET for Conventional Type Questions. Any omission/discrepancy will render the Answer Sheet liable for rejection.
5. Do not write anything else on the OMR Answer Sheet except the required information. Before you proceed to mark in the OMR Answer Sheet, please ensure that you have filled in the required particulars as per given instructions.
6. This Test Booklet is divided into 3 (three) parts - Part-I, Part-II and Part-III.
7. All three parts are Compulsory.
8. Part-I consists of Multiple-Choice Questions. The answers for these questions have to be marked in the OMR Answer Sheet provided to you.
9. Parts II and III consist of Conventional Type Questions. The answers for these questions have to be written in the Separate Answer Booklet provided to you.
10. After you have completed filling in all your responses on the OMR Answer Sheet and the Answer Booklet(s) and the examination has concluded, you should hand over the OMR Answer Sheet and the Answer Booklet(s) to the Invigilator only. You are permitted to take the Test Booklet with you.
11. **Marking Scheme**
THERE WILL BE **NEGATIVE MARKING** FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTIONS
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, one-third of the marks assigned to the question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a wrong answer even if one of the given answers happens to be correct and there will be same penalty as above to the question.
 - (iii) If a question is left blank. i.e., no answer is given by the candidate, there will be no penalty for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

PART - I
(Multiple Choice Questions)

Choose the correct answer for Questions 1 to 50 from the given options. Each question carries 3 marks.
[50 x 3 = 150]

1. The term biology was introduced by:
(a) Lamarck & Treviranus
(b) Darwin
(c) John Ray
(d) Aristotle
2. The cell was discovered by:
(a) Swanson
(b) Leeuwenhoek
(c) Robert Hooke
(d) Robert Brown
3. The modern cell theory is known as:
(a) Protoplasmic theory
(b) Cell Principle
(c) Cell Doctrine
(d) Both (b) & (c)
4. The percentage of lipids and proteins in the plasma membrane is:
(a) 25% Lipids & 75% proteins
(b) 75% Lipids & 25% proteins
(c) 42% Lipids & 58% proteins
(d) None of the above
5. The matrix of cell wall is made up of:
(a) Pectin
(b) Hemicellulose
(c) Glycoprotein
(d) Cellulose
6. Rough endoplasmic reticulum is one that has:
(a) Abundant tubules
(b) Association with ribosomes
(c) Fenestrations
(d) Both (b) & (c)
7. Golgi apparatus is concerned with:
(a) Excretion
(b) Secretion
(c) ATP Synthesis
(d) RNA Synthesis
8. Chromatin material which remains condensed during interphase is called as:
(a) Heterochromatin
(b) Euchromatin
(c) Chromonemata
(d) Megachromatin
9. The factors representing the contrasting pairs of characters are called:
(a) Dominant & Recessive
(b) Alleles
(c) Homologous pairs
(d) Determinants
10. During meiosis, the crossing over which occurs between the homologous chromosomes is of:
(a) No genetic Significance
(b) Importance to bring about recombination of characters
(c) Importance because it produces nutrition
(d) Importance because it causes reorganization of the cytoplasm
11. Name the taxonomist who wrote '*Species Plantarum*' and '*System Naturae*'.
(a) Bentham & Hooker
(b) John Ray
(c) Linnaeus
(d) De Candolle

12. Species belonging to different time periods are:
- Allochronic species
 - Parapatric species
 - Synchronic species
 - Allopatric species
13. Development of mouth later than anus is the condition called:
- Branchiostomatic
 - Schizostomatic
 - Deutrostomatic
 - Protostomatic
14. Besides Annelida and Arthropoda metamerism is also found in:
- Cestoda
 - Acanthocephala
 - Chordata
 - Mollusca
15. Common larva of sponge is:
- Tadpole
 - Planula
 - Placula
 - Parenchymula
16. Flat worms are:
- Diploblastic
 - Triploblastic
 - Monoblastic
 - None of the above
17. The major excretory product of Arthropods is:
- Ammonia
 - Urea
 - Uric Acid
 - Trimethylamine oxide
18. Which of these is a fish?
- Sea -Horse
 - Sea -Cow
 - Sea- Cucumber
 - Sea -Urchin
19. In paramecium undigested food is passed out through:
- Vestibule
 - Cytopharynx
 - Cytopyge
 - Cytostome
20. Hydra can digest all types of food except
- Protein
 - Carbohydrates
 - Fats
 - Starch
21. Obelia lacks:
- Gastric pouches
 - Oral arms
 - Gastric Filaments
 - All of the above
22. Ascaris is found in the:
- Stomach of Humans
 - Liver of Humans
 - Intestine of Humans
 - Spleen of Humans
23. In earthworms blood pigment is -
- Haemoglobin
 - Hemocyanin
 - Cytochrome
 - Hemerythrin
24. The antenna of cockroach is:
- State Acoustic
 - Thigmotactic
 - Chemotactic
 - Geotactic
25. Torsion and de torsion are shown by the members of Class:
- Cephalopoda
 - Gastropoda
 - Scaphopoda
 - Pelecypoda

26. All chordate characters are present in the larva but are absent in the adult of:
- Herdmania
 - Petromyzon
 - Amphioxus
 - Oikopleura
27. Total neoteny is shown by:
- Proteus
 - Siren
 - Ambystoma
 - All of the above
28. Reptiles are found everywhere except:
- Asia
 - New Zealand
 - Greenland
 - Antarctica
29. Mammalian brain differs from amphibian brain in having:
- Olfactory Lobes
 - Corpus Collosum
 - Cerebellum
 - Hypothalamus
30. A substance that secretes a biochemical reaction but does not itself undergo change is a:
- Catalyst
 - Enzyme
 - Modulator
 - Activator
31. The gland associated with salivation is:
- Sublingual gland
 - Submandibular gland
 - Parotid gland
 - All of the above
32. Lungs develop from:
- Ectoderm
 - Endoderm
 - Mesoderm
 - Both (b) and (c)
33. Heart beat originates from:
- Purkinje fibres
 - Bundle of His
 - SA Node
 - AV Node
34. The Central Nervous System includes:
- Brain & Cranial nerves
 - Brain & Spinal Cord
 - Cranial Nerves & Spinal Nerves
 - Sympathetic & Parasympathetic Nerves
35. Accumulation of Urea and Uric acid is toxic especially to the:
- Brain
 - Heart
 - Liver
 - Kidney
36. In humans, sperms are stored in:
- Seminal vesicles
 - Testis
 - Epididymis
 - Sertoli Cells
37. Neurons have the capacity to:
- Conduct impulses
 - Communicate with other cells
 - Respond to stimuli
 - All of the above.
38. The amount of yolk determines the -
- Type of eggs
 - Blastulation
 - Gastrulation
 - All of the Above
39. Superficial cleavage is the characteristic of:
- Insects
 - Birds
 - Amniotes
 - Protochordates

40. Archenteron is lined with:
- Mesoderm
 - Endoderm
 - Ectoderm
 - Both Mesoderm and Ectoderm
41. The first compound molecules of the primitive earth were:
- Water & Methane
 - Methane & Hydrogen
 - Water & Ammonia
 - Nitrites & Carbides
42. Energy and Nutrients enter a community through:
- Producers
 - Primary Consumers
 - Secondary Consumers
 - Tertiary Consumers
43. Burning of the biomass results in the formation of:
- N_2O
 - NO
 - NO_2
 - All of the above
44. In the absence of greenhouse gases, the earth's average temperature will be a chilling:
- $0^\circ C$
 - $-5^\circ C$
 - $-18^\circ C$
 - $-55^\circ C$
45. Chlorofluorocarbons are used in:
- Air Conditioning
 - Refrigerators
 - Cleaning of Electronic Components
 - All of the above
46. The transition zone where two different types of community meet is called as:
- Ecotype
 - Ecotone
 - Ecocline
 - Ecosystem
47. Wax is secreted by the:
- Queen Bee
 - Worker Bees
 - Drones
 - All of the above
48. Lac insect belongs to order:
- Lepidoptera
 - Hemiptera
 - Hymenoptera
 - Diptera
49. As compared to meiosis, mitosis has:
- Half chromosome numbers in daughter cells
 - Homologous chromosomes form pairs
 - Prophase is shorter
 - Telophase stage is absent
50. Trophic levels in a food chain are formed by:
- Producer
 - Consumers
 - Decomposers
 - All of the above

PART - II
(Conventional Type Questions)

Answer any 2 (two) from Questions 51 to 55. Each question carries 25 marks.

[2 x 25 = 50]

51. What is the basis of heredity? Describe in detail the Mendel's Principles of Inheritance.
52. Describe the general classification of Phylum Pisces. Also give their detailed classification up to orders with suitable examples.
53. Give a comparative account of the heart and circulatory system of vertebrates.
54. Explain types of respiration in humans. Also explain the mechanism of pulmonary respiration and transport of O_2 and CO_2 .
55. What is evolution? Give an account of biochemical, physiological and connecting link evidences in favour of evolution.

PART - III
(Conventional Type Questions)

Answer any 5 (five) from Questions 56 to 63. Each question carries 10 marks.

[5 x 10 = 50]

56. Give the general characteristics of phylum porifera and classify it up to sub class.
57. Differentiate between Obelia Polyp and Obelia Medusa. Draw suitable diagrams.
58. Describe the digestive system of balanoglossus. Draw suitable diagrams.
59. What is a synapse? Briefly explain the mechanism of synaptic transmission of nerve impulse.
60. Give an account of the types of eggs and patterns of cleavage in mammals.
61. Distinguish between:
 - (a) Blastulation and Gastrulation
 - (b) Area Opaca and Area Pellucida
62. What is Hardy - Weinberg law? What are the conditions that disturb genetic equilibrium causing evolution?
63. Write short notes on:
 - (a) Biotic and Abiotic factors
 - (b) Harmful Insects.

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