

**Sikkim Public Service Commission**  
**Main Written Examination for the Post of Sub Inspector**  
**PAPER - II ZOOLOGY**

Time allowed: 3.00 Hrs

Maximum Marks: 250

**INSTRUCTION TO CANDIDATES**

Read the instructions carefully before answering the questions: -

1. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**
2. **Use only Black Ball Point Pen to fill the OMR Sheet.**
3. Do not write anything else on the OMR Answer Sheet except the required information.
4. **This Test Booklet contains 50 questions in MCQ Mode in Part I to be marked in OMR Sheet. Part II and Part III are Subjective Questions which have to be written on separate answer sheet provided to you.**
5. Before you proceed to mark in the Answer Sheet (OMR), you have to fill in some particulars in the Answer Sheet (OMR) as per given instructions.
6. After you have completed filling in all your responses on the Answer Sheet (OMR) and the examination has concluded, you should hand over the Answer Sheet (OMR) and separate answer sheet to the Invigilator only. You are permitted to take with you the Test Booklet.
7. **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**

Choose the correct answer for the following questions:

(3x50=150)

**1. Binomial nomenclature was introduced by:**

- A. Aristotle
- B. Carlous Linnaeus
- C. John Ray
- D. E.Haeckel.

**2. Cells secreting spongin are:**

- A. Spongioblasts
- B. Choanocytes
- C. Pinacocytes
- D. Thesocytes

**3. Reproductive stage of Obelia is:**

- A. Medusa
- B. Polyp
- C. Zooid
- D. Corals

**4. How many suckers are found in Taenia?**

- A. 2
- B. 5
- C. 4
- D. 6

**5. The first group of triploblastic and true coelomate animals is:**

- A. Annelida
- B. Platyhelminthes
- C. Aschelminthes
- D. Arthropoda

6. **Excretory organs of Arthropoda is:**
- A. Malpighian tubule
  - B. Green Glands
  - C. Coxal Glands
  - D. All of the above.
7. **The members of honey bees recognize each other by:**
- A. Dance
  - B. Touch
  - C. Vision
  - D. Smell
8. **The blood of Mollusca contains:**
- A. Copper
  - B. Iron
  - C. Magnesium
  - D. Potassium
9. **The most primitive Mollusc is:**
- A. Teredo
  - B. Neomenia
  - C. Neopilina
  - D. Chaetoderma
10. **Which of the following is not applicable to echinoderms?**
- A. Triploblastic
  - B. Oral and aboral surfaces
  - C. Cephalisation
  - D. Deuterostomes
11. **All Protochordates are:**
- A. Terrestrial
  - B. Freshwater
  - C. Marine
  - D. Amphibious

**12. Amniota includes:**

- A. Pisces and Amphibia
- B. Reptiles, Birds and Mammals
- C. Amphibia and Reptiles
- D. Birds and Mammals

**13. Match column I with column II and select the correct answer using answer codes:**

**Column I**

- A) Atrium is present
  - B) Bioluminescent
  - C) Adhesive Papillae
  - D) Wheel Organs
- Cephalochordates

**Column II**

- Larva of Herdmania
- Amphioxus
- Pyrosoma
- Urochordates &

**Answer codes:**

	A	B	C	D
a	2	3	1	4
b	2	1	3	4
c	3	4	1	2
d	4	3	1	2

**14. Catadromous fish migrates from:**

- A. River to sea
- B. Sea to river
- C. River to estuary
- D. Estuary to sea



**15. Pisces are the:**

- A. Largest class of vertebrates
- B. Smallest class of vertebrates
- C. First group of vertebrates
- D. First group of Amniotes

**16. Amphibians originated during the:**

- A. Ordovician period of the paleozoic era
- B. Devonian period of the paleozoic era
- C. Carboniferous period of the paleozoic era
- D. Mesozoic era

**17. Which one of these is a simple reflex:**

- A. Closing of eyes when an object suddenly approaches them
- B. Climbing stairs in dark
- C. Watering of mouth at the sight of delicious food
- D. Tying laces while talking or looking at another person

**18. The birds' bones are:**

- A. Solid, having bone marrow
- B. Pneumatic, having bone marrow
- C. Pneumatic, & without bone marrow
- D. Solid, & with bone marrow

**19. Which of the following statements is correct?**

- A. All mammals are oviparous
- B. All mammals are omnivorous
- C. All mammals possess dorsal tubular nerve cord
- D. All mammals possess ventral nerve cord

**20. Hormones are of:**

- A. Proteinaceous nature
- B. Steroidal nature
- C. Amino acid derivative
- D. All of the above

**21. Blood pressure is controlled by:**

- A. Corpus luteum
- B. Cortisol
- C. Insulin
- D. Adrenal

**22. If Parathyroid gland is removed, it will result in:**

- A. Myxoedema
- B. Disturbance in calcium levels
- C. Increase in blood pressure
- D. Disturbance in metabolic rate

**23. The hormone responsible for Implantation of embryo is:**

- A. Progesterone
- B. Oxytocin
- C. Estrogen
- D. Oxytocin & Relaxin

**24. Which of the following hormones is not regulated by the anterior pituitary:**

- A. Estrogen
- B. Cortisol
- C. Thyroxine
- D. Glucagon

**25. The only known animal without pleural space is:**

- A. Rhinoceros
- B. Hippopotamuses
- C. Monotremes
- D. Elephants

**26. The most efficient lungs are found in:**

- A. Mammals
- B. Birds
- C. Reptiles
- D. Amphibians

**27. Biological equilibrium is shown by:**

- A. Abiotic factors, Consumers & Decomposers
- B. Producers, Consumers & Decomposers
- C. Consumers & Decomposers
- D. Producers & decomposers

**28. The first Marine Biosphere Reserve established in India is:**

- A. Sunderbans Biosphere Reserve
- B. Similipal Biosphere Reserve
- C. Gulf of Munar Biosphere Reserve
- D. Great Nicobar Biosphere Reserve

**29. A Biodiversity Hot Spot is a region with a high level of:**

- A. Endemic species
- B. Rare species
- C. Threatened species
- D. All of the above

**30. Which one of the following is responsible for survival of higher animals?**

- A. Instinct
- B. Learning
- C. Body Changes
- D. A combination of all the above

**31. Which of the following animals produce sound of both higher frequency (audible to humans) as well as sound of lower frequencies (not audible to humans):**

- A. Echidna
- B. Opossum
- C. Elephant
- D. Tiger

**32. Chemically Lac contains:**

- A. Lac, Resin & Wax
- B. Lac, Resin & Lactose
- C. Albuminous matter & Dyes
- D. All of the above

**33. The father of modern apiculture is:**

- A. Amos Root
- B. Jan Dzierzon
- C. Moses Quinby
- D. May Berenbaun

**34. The amount of yolk in egg determines:**

- A. Type of eggs
- B. Blastulation
- C. Gastrulation
- D. All of the above

**35. In Protostomia, blastopore becomes mouth except in:**

- A. Echinoderms
- B. Hemichordata
- C. Echinoderms & Hemichordata
- D. Mollousca & Echinoderms

**36. The Chi-square test of independence is used for:**

- A. One variable
- B. Two variables
- C. More than two variables
- D. All of the above

**37. Mean, Median, Mode of 4, 6, and 5 will be:**

- A. 5, 5 and 5
- B. 5, 6 & 0
- C. 5, 6 & No Mode
- D. 5, 6 & 3



**38. Ribosomes are sites of which reaction:**

- A. Respiration
- B. Photosynthesis
- C. Protein synthesis
- D. Fat synthesis

**39. A Fluorescent microscope is used**

- A. For Increasing resolving power
- B. For obtaining X-Ray diffraction pattern of DNA
- C. To study cell & their components in a living state
- D. To localise cell structure with fluorochrome dyes.

**40. Which Dye is used to stain chromosomes:**

- A. Acetocarmine
- B. Haematoxylin
- C. Feulgen
- D. All of the above

**41. How is the sex of offspring determined in Humans:**

- A. Sex Chromosome of mother
- B. Size of Ovum
- C. Size of sperm
- D. Sex Chromosome of father

**42. The connecting link between Reptiles and Birds is:**

- A. Dimetrodon
- B. Dodo
- C. Archaeopteryx
- D. Sphenodon

**43. Human evolution originated in:**

- A. Africa
- B. Java
- C. France
- D. China

**44. The correct order of glucose metabolism is:**

- A. Fermentation → Krebs cycle → Electron transport chain
- B. Glycolysis → Cori cycle → Krebs cycle → Electron transport chain
- C. Glycolysis → Krebs cycle → Oxidative phosphorylation
- D. Cori cycle → Glycolysis → Krebs cycle → Oxidative phosphorylation

**45. Folate occurs naturally in:**

- A. Poultry, beans and legumes
- B. Wheat bran & other whole grains
- C. Pork, shell fish & dark green leafy vegetables
- D. All of the above

**46. The tracheal rings in humans are:**

- A. L - Shaped
- B. S - Shaped
- C. C- Shaped
- D. V- Shaped

**47. The part of alimentary canal, most sensitive to damage caused by radiation and anticancer drugs is:**

- A. Gall Bladder
- B. Crypts of Lieberkühn
- C. Gastric Glands
- D. Salivary Glands

**48. Genetically originated bacteria are being used in commercial production of:**

- A. Melatonin
- B. Testosterone
- C. Human Insulin
- D. Thyroxine

**49. Termination codons for Protein Synthesis are:**

- A. AUU, AUG & GUU
- B. UGA, UAA & UAG
- C. UAU, UAG & UUA
- D. AAA, UUU, & UGA

**50. The number of genetic disorders in human beings is:**

- A. 300
- B. 3000
- C. 100
- D. 150

## **PART – II**

**Attempt ANY TWO the following:**

**(25X2=50)**

- 1) Describe the haemocoelomic system of Hirudinaria (Leech) and discuss the nature of sinuses in the animal.
- 2) Give the general characteristics and detailed classification of Protochordates.
- 3) Describe the different parts of an electron microscope and compare it with light microscope. Discuss the different types of Electron microscopes.
- 4) Give the ultra-structure of skeletal muscle. Also, briefly describe the structural and chemical changes in the muscle during contraction.
- 5) What do you understand by Recombinant DNA technology? Discuss the various uses of this technology in genetic engineering and biotechnology.

### PART - III

Attempt **ANY FIVE** of the following:

(10X5=50)

- 1) Define Hormones. Give an account of mechanism of hormone action.
- 2) Write short notes on Tussock silk and uses of silk.
- 3) Explain the following:
  - a) Translocation experiments
  - b) Relaxation Oscillation Theory
- 4) What are PCR and RAPD? Discuss their role in preparing molecular genetic maps.
- 5) Describe Krebs's cycle.
- 6) State Hardy Weinberg's law of equilibrium. Discuss its salient features.

What is differentiation of cells? "Stem cells are undifferentiated cells but source for specialized cells "Explain.

- or Describe the parasitic adaptations in Platyhelminthes.