Civil Services (Main) Examination, 2013

ZOOLOGY

(Paper I)

Time Allowed : Three Hours **Maximum Marks : 250**

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.
Candidate has to attempt FIVE questions in all.
Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.
The number of marks carried by a question/part is indicated against it.
Wherever any assumptions are made for answering a question, they must be clearly indicated.
Word limit in questions, wherever specified, should be adhered to.
Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

SECTION 'A'

1. Answer the following in about 150 words each: **10×5=50**

(a) Comment on the evolutionary change in the proportion of limbic system versus cerebral hemisphere in vertebrates.

(b) What is circadian and circannual rhythm? Discuss briefly the influence of exogenous cycles on these rhythms.

(c) Describe locomotion in Hirudinaria.

(d) Draw a labelled diagram of alimentary canal and salivary apparatus in Periplaneta americana.

(e) Describe hyoid apparatus in Frog or Necturus.

2. (a) Describe the functional anatomy of neuro-endocrine inter-relationship in mammalian hypophysis. Name hypothalamic and hypophyseal hormones in the tabular form showing their functional relationship. With the help of the diagram only, explain feedback mechanism in the HPG axis. **25**

(b) Write an account of parental care in Amphibia. **25**

3. (a) Through a comparative chart, give an account of accessory sex glands in the male vertebrate animal types such as dogfish, frog, lizard, pigeon and rabbit. **25**

(b) Give an elaborate account of canal system in Porifera and discuss the taxonomic importance of spicules. **25**

4. (a) Give an account of coral reefs, their constituent compartments and significance. **25**

(b) Describe the life cycle of Taenia solium through a labelled diagram only and discuss its parasitic adaptations. **25**

SECTION 'B'

5. Answer the following in about 150 words each: **10×5=50**

(a) While using a compound microscope, how will you know how much you are magnifying an object? Through a diagram show the relative working distance under low and high powers.

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(b) Define ‘insight’. Explain this behaviour using the example of Chimpanzees.

(c) What is forensic biotechnology? Discuss its significance.

(d) Describe the method of studying animal behaviour using T-maze.

(e) Through a labelled diagram, show the stages of life-history of Bombyx mori.

6. (a) Describe the carbon cycle and discuss its peculiarities. How do human activities interfere with the carbon cycle? **25**

(b) Define ecosystem. Discuss the dynamics of the ecosystem and the factors influencing it. **25**

7. (a) State briefly what are biomes, ecotones and ecological succession. Give an account of the causes, trends and general process of ecological succession in nature. **25**

(b) What is filariasis? Discuss the structure and life-history of filarial worm. Highlight its pathogenic aspects and preventive measures. **25**

8. (a) What is the principle of spectrophotometry? Discuss the details of instrumentation and application of spectrophotometer. Comment upon the common feature of spectrophotometric assay and ELISA, if any. **25**

(b) Name four human genetic diseases. Give an account of human genome research and its applications. **25**

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