QUESTION PAPER SPECIFIC INSTRUCTIONS

Please read each of the following instructions carefully before attempting questions.

There are EIGHT questions divided in TWO SECTIONS and printed both in HINDI and in ENGLISH.

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.

Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in a medium other than the authorized one.

Word limit in questions, wherever specified, should be adhered to.

Illustrate your answers with suitable sketches and diagrams, wherever considered necessary.

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.
1. Write notes on the following in about 150 words each:
   
   1.(a) Protostomes and Deuterostomes
   1.(b) Peripatus
   1.(c) Paedomorphosis
   1.(d) Status of Sphenodon
   1.(e) General characters of Cetaceans and Primates

2. Describe the Integumentary derivatives in Mammals along with labelled diagrams.

3. Give an account of the structure and life cycle of Wucheraria bancrofti. Add a note on the pathogenicity and control of the disease caused by this parasite.

4. What is retrogressive metamorphosis? Give an illustrated account of this phenomenon in Herdmania. Also write a note on its affinities.

5. Describe different larval forms of Echinoderms and comment on their evolutionary significance.

6. Explain HPA axis. Draw a transverse section of the Adrenal gland and describe the functions of its different hormones.

7. Give an illustrated account of the life cycle of Plasmodium vivax.
4.(a) कीट मुखाव्या (मात्र साइन पार्टस) के विभिन्न प्रकारों का सचिवाल वर्णन कीजिए तथा उनकी प्रकारमूल्यक महत्ता पर टिप्पणी लिखिए।
Give an illustrated account of different types of mouth parts in insects and write a note on their functional significance. 20

4.(b) पक्षियों के प्रवास का विकरण प्रमुख कीजिए। प्रवास के समय उन्हें जिन समस्याओं का सामना करना पड़ता है उस पर टिप्पणी भी लिखिए।
Give an account of Migration in birds. Add a note on the problems faced by them during migration. 15

4.(c) ओबेलिया की संचना एवं जीवन-चक्र की विभिन्न अवस्थाओं को केवल सुचितित चित्रों के माध्यम से प्रस्तुत कीजिए (रूपों की आवश्यकता नहीं है)। ओबेलिया के संदर्भ में बहुवर्षता तथा मेटाज़नेसिस की स्थिति की व्याख्या भी कीजिए।
With the help of labelled diagrams only, explain the structure and different stages of the life cycle of *Obelia* (no description is required). With reference to *Obelia*, also explain the polymorphism and the status of metagenesis. 15

खण्ड ‘B’ SECTION ‘B’

5. निम्नलिखित में से प्रत्येक पर लगभग 150 शब्दों में टिप्पणी लिखिए:
Write notes on the following in about 150 words each: 10×5=50

5.(a) ओजोन परत का निम्निकरण
Ozone layer depletion 10

5.(b) समाप्ति गतिकी
Population dynamics 10

5.(c) भारत के संदर्भ में स्थायिकता
Endemism with reference to India 10

5.(d) अग्रास्त तथा प्राणनूतलन
Habituation and Conditioning 10

5.(e) पीसीआर
PCR 10

6.(a) पारिस्थितिक अनुक्रम क्या है? प्रकृति में पारिस्थितिक अनुक्रम के कारण, प्रकार और सामान्य प्रक्रम का एक विवरण प्रस्तुत कीजिए।
What is ecological succession? Give an account of the causes, types and general process of ecological succession in nature. 20
6.(b) What is eusocialism? Describe this phenomenon with reference to Honey Bees.

6.(c) What is the systemic position of rice pest? Give an account of its life cycle and the damage caused by this pest. Write a note on the measure for its prevention and control.

7.(a) Give an account of sources, impacts and prevention of air pollution. Comment on Montreal and Kyoto protocol also.

7.(b) What is “Lac-culture”? Explain the methodology employed in lac-culture. Also describe the uses of lac.

7.(c) What is resolution of a microscope? Comment on the principles of SEM and TEM. Describe the structure, working and applications of any one of the electron microscope in biology.

8.(a) What is biological rhythm? Give an account of its types and characteristics. What is the role of different factors in their entrainment?

8.(b) What is Chi-square test? Give a detailed account of the computation of Chi-square for tests of independence, homogeneity and goodness of fit using biological data.

8.(c) Describe the structure of the pathogen responsible for AIDS. How it is transmitted? Also mention the pathogenesis and prevention of AIDS.