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) Gamontogamy in *Monocystis*

1.(b) Skeleton in sponges

1.(c) Describe different kinds of coral reefs on the basis of their formation

1.(d) Write a note on general characters of *Prototheria*

1.(e) Flight adaptations in birds

2.(a) With the help of labelled diagrams, describe the mouth parts of house-fly, butter-fly and honey bee.

2.(b) With the help of suitable diagrams, describe the different stages of life cycle of *Nereis*.

2.(c) With the help of labelled diagrams, give an account of the larvae found in *Asteroida*, *Ophiuroidea* and *Holothuroidea*.

3.(a) Describe the distribution, habits and habitat of *Rhybenchephalia*. Write a note on crocodilian and lacertilian characters of *Sphenodon*.

3.(b) Explain origin of Amphibia and classify Amphibia up to sub class with characters and examples.

3.(c) With the help of labelled diagrams only, explain the different larval stages in the life cycle of *Fasciola hepatica* (No description is required).
4. (a) मछली के विभिन्न सहायक श्वसन अंगों का उदाहरण सहित श्वसन कीजिए।
Describe various accessory respiratory organs of fishes with examples.

4. (b) यूनियों के श्वसन अंगों तथा श्वसन चक्र का वर्णन कीजिए।
Describe the respiratory organs and mechanism of respiration in *Unio*.

4. (c) सरीसृप, पक्षीय तथा स्तनधारीयों में महाधमी चापों का वर्णन कीजिए।
Give an account of aortic arches in reptiles, birds and mammals.

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) जैवमंडल के प्रभाव
Division of biosphere

5. (b) जैविक तंत्र का वर्णन कीजिए
Give an account of biological rhythms

5. (c) फाफ्टोरस जैव-मू-रासायनिक चक्र
Phosphorus biogeochemical cycle

5. (d) पारंपरिक प्राणी
Transgenetic animals

5. (e) टी. ई. एम.
T E M

6. (a) जैवप्रौद्योगिकी का फार्मिस्क विज्ञान में क्या उपयोग हैं?
What are the uses of Biotechnology in Forensic science?

6. (b) धारणिय विकास हेतु वेक्स रंगदीन के उपयोगों का वर्णन कीजिए।
Describe the uses of remote sensing in sustainable development.

6. (c) वर्णालम्बापी (स्पेक्ट्रोफोटोमीटर) का सिद्धान्त समझाइए तथा इसके निम्नलिखित घटकों का वर्णन कीजिए:

(i) विकरण स्रोत
(ii) प्रकाश नलिका (फोटो ट्यूब)
(iii) प्रिज्म

Explain the principle of spectrophotometer and describe its following components:

(i) Radiation sources
(ii) Phototube
(iii) Prism

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7. (a) Describe the names of any four diseases of silkworm and their causal agents (scientific names), sources of infection, symptoms and management.

7. (b) Describe the characteristics of social insects with examples.

7. (c) Describe chromosome painting and its versatility in modern diagnostics.

8. (a) ‘एफ’-परीक्षण तथा ‘टी’-परीक्षण के बीच अन्तर कीजिए।
Describe the differences between f-test and t-test.

8. (b) जैल इलेक्ट्रोफोरेसिस के विद्युत एवं अनुप्रयोग का वर्णन कीजिए।
Describe the principle and applications of gel electrophoresis.

8. (c) खाद्याङ्क के किन्हीं तीन पीड़ाकों के वैज्ञानिक नाम लिखिए तथा साइटोफिलस ओराइजी द्वारा की गई क्षति की प्रकृति एवं प्रबन्धन का वर्णन कीजिए।
Write scientific names of any three pests of stored grains and describe the nature of damage and management of *Sitophilus oryzae*.