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# UPSC IFOS Exam

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**ZOOLOGY**  
**Paper – II****Time Allowed : Three Hours****Maximum Marks : 200****Question Paper Specific Instructions**

**Please read each of the following instructions carefully before attempting questions :**

There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.

Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.

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.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Answers must be written in **ENGLISH** only.

Neat sketches may be drawn, wherever required.

**SECTION A**

- Q1.**
- |     |   |   |
|-----|---|---|
| (a) | Explain the role of endoplasmic reticulum in lipid biosynthesis.              | 8 |
| (b) | Explain the types of transposons with a note on any two transposition events. | 8 |
| (c) | Describe the different types of vectors.                                      | 8 |
| (d) | Explain how mimicry helps animals to lead a successful life.                  | 8 |
| (e) | Discuss the various types of zoological nomenclature with suitable examples.  | 8 |

- Q2.** (a) Discuss the application of pedigree analysis in identifying diseases. 15
- (b) What are lysosomes ? Discuss their role in intracellular digestion. Give an example of lysosomal storage disorder. 15
- (c) Describe the steps involved in gene regulation in eukaryotes. 10
- Q3.** (a) With a neatly labelled diagram, explain sodium-potassium pump and its role in membrane transport. 10
- (b) Explain the mode of speciation in evolution with examples. 15
- (c) Explain how protein synthesis is the key to the expression of biological information. 15
- Q4.** (a) Explain how unknown five-toed Condylarthra evolved in Equus. State the evolutionary pattern in each geological era. 10
- (b) Discuss the structure and functions of Ribosomes and Golgi bodies with an emphasis on secretion of proteins. 15
- (c) Describe the mechanism of DNA replication. 15

## SECTION B

- Q5.** (a) Explain enzyme kinetics with suitable examples. 8
- (b) Explain how the biological energy transformations obey the laws of thermodynamics. 8
- (c) Explain the extrinsic pathway for initiation of blood clotting. 8
- (d) Describe the respiratory regulation of acid-base balance in body fluids. 8
- (e) What is neoteny ? Discuss the phenomenon in Amphibia giving suitable example. 8
- Q6.** (a) Draw the structure of cAMP. Explain how cAMP acts as second messenger for  $\beta$ -adrenergic receptor system. 15
- (b) Describe the molecular mechanism of skeletal muscle contraction. 10
- (c) Define cloning. Explain somatic cell nuclear transfer method with suitable examples. 15
- Q7.** (a) Discuss the transport of oxygen in the blood. Give an account of various factors that shift oxygen-hemoglobin dissociation curve. 15
- (b) Explain enzyme specificity with suitable examples. How is enzyme activity controlled ? 15
- (c) Describe the process of metamorphosis in frogs and explain the role of thyroxin. 10
- Q8.** (a) What is embryonic induction ? Describe the mechanism of induction giving examples. 15
- (b) Enlist the composition of bile. Discuss the role of bile salts in fat digestion and absorption. 15
- (c) What is immunity ? Giving suitable examples explain humoral and cell mediated immunity. 10



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