SapiensIAS
Be the Game Changer

IAS 2025

ZOOLOGY FOUNDATION

BY PRADIP SARKAR

ONLINE, OFFLINE & RECORDED

1. 5 months course duration (covering all topics of paper 1 & 2)
2. Answer writing skill development (on class assignment on spot evaluation)
3. Discussion on last 10 years previous year question
4. Weekly class test (with due evaluation and personalised mentorship)
5. Including test series (total 12 tests: 6 sectional & 6 full length)
6. Study materials (updated & well organised based on new upsc trends)

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KNOW YOUR TEACHER

Pradip Sarkar is one of the top educator in a zoology optional who is teaching for past 17 years.

- He has completed Hons, master in zoology from Presidency College, Kolkata which is one of the prestigious colleges in India.
- He Faced all the four interviews in UPSC (CSE).
- He was one of the top scorers in zoology with 352 marks.
- He mentored hundreds of IAS, IFoS, IPS, IRS etc in past 17 years with top ranking in Zoology.
- **Alok Ranjan Ghosh** scored 414 marks in zoology which is highest marks in UPSC (CSE) & many others scored more than 300+ marks in IAS exam.

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WE ARE PROVIDING

- Explaining every topic in the syllabus in simplified manner with examples, diagram and flowcharts.
- Giving **framework (skeleton)**, for each and every topic for proper organisation of facts and developing flow in the answer.
- Discussing topics with current facts, wherever required.
- Teaching as how to write relevant **introduction, structured facts in the body & effective conclusion.**
- Answer writing practice through **assignments** with instant copy evaluation. also, to teach how to write answer without compromising facts within the constraints of word limit.
- Referring to relevant diagrams, graphs, flowcharts and example for value addition.
- **Study material** - highly processed and well organised updated facts with relevant **introduction**, **well-structured body** with case studies, diagrams, flow charts, example and effective **conclusions**. It is **ready to write format** in the exam directly. You hardly require any source other than our study material.
- **Providing test series** - total 12 tests - 6 sectional tests + 6 full lengths tests (2 full length tests before prelims and 4 full length tests after prelims).

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Syllabus to be Covered

Paper-1

1. Non-chordata and chordata:

(a) Classification and relationship of various phyla up-to sub-classes; acoelomata and coelomata; protostomes and deuterostomes, bilateralia and radiata; status of protista, parazoa, onychophora and hemichordata; symmetry.

(b) Protozoa: locomotion,, nutrition, reproduction; evolution of sex; general features and life history of paramaecium, monocystis, plasmodium & leisismania.

(c) Porifera: skeleton, canal system & reproduction.

(d) Coelenterata: polymorphism, defensive structures and their mechanism; coral reefs and their formation; metagenesis; general features and life history of obelia and aurelia.

(e) Platyhelminthes: parasitic adaptation; general features and life history of fasciola and taenia and their pathogenic symptoms.

(f) Nemathelminthes: general features, life history and parasitic adaptation of ascaris; and wuchereria.

(g) Annelida: coelom and metamerism; modes of life in polychaetes; general features and life history of nereis, earthworm and leach.

(h) Arthropoda: larval forms and parasitism in crustacea; vision and respiration in arthropods (prawn, cockroach and scorpion); modification of mouth parts in insects (cockroach, mosquito, housefly, honey bee and butterfly); metamorphosis in insects and its hormonal regulation; social behavior of apis and termites.

(i) Mollusca: feeding, respiration, locomotion, general features and life history of lamellidens, fila and sepia, torsion and detorsion in gastropods.

(j) Echinodermata: Feeding respiration, locomotion larval forms; general features and life history of asterias.

(k) Protochordata: Origin of chordates; general features and life history of branchiostoma and herdamania.

(i) Pisces: scales, respiration, locomotion, migration.

(m) Amphibia: origin of tetrapods; parental care, paedomorphosis.

(n) Reptilia: origin of reptiles; skull types; status of sphenodon and crocodiles.

(o) Aves: origin of birds; flight adaptation, migration.

(p) Mammalia: origin of mammals; dentition; general features of egglaying mammals, pouchedmammals, aquatic mammals and primates; endocrine glands and other hormone producing structures (pituitary, thyroid, parathyroid, adrenal, pancreas, gonads) and their inter relationships.

(q) Comparative vertebrates(integument and its derivatives, endoskeleton, locomotory organs. functional anatomy of digestive system, respiratory system, circulatory system including heart and various systems aortic arches; urino-genital system, brain and sense organs (eye & ear).

2. Ecology:

(a) Biosphere: concept of biosphere, biomes, biogeochemical cycles, human induted changes in atmosphere including green-houses effect, ecological succession, biomes and ecotones, community ecology.

(b) Concept of ecosystem structure and function of ecosystem, type of ecosystem, ecological succession, ecological adaptation.

(c) Population, characteristics, population dynamics, population stabilization.

(d) Biodiversity and diversity conservation of natural resources.

Syllabus to be Covered

(e) Wildlife of india.

(f) Remote sensing for sustainable development.

(g) Environmental biodegradation; pollution and its impact on biosphere and its prevention.

3. Ethology:

(a) Behaviour: Sensory filtering, responsiveness, sign stimuli, learning & memory, instinct, habituation, conditioning, imprinting.

(b) Role of hormones in drive; role of pheromones in alarm spreading; crypsis, predator detection, predator tactics, special hierarchies in primates, social organization in insects.

(c) **Orientation, navigation, homing; biological rhythms;** biological clock, tidal, seasonal and circadian rhythms.

(d) Methods of studying animal behavior including sexual conflict, selfishness, kinship and altruism.

4. Economic zoology:

(a) Apiculture, sericulture, lac culture, carp culture, pearl culture, prawn culture vermiculture.

(b) Major infectious and communicable diseases (malaria, filarial, tuberculosis cholera and AIDS) their vectors, pathogens and prevention.

(c) Cattle and livestock diseases, their pathogens (helminthes) & vectors (ticks, mites, tabanus, stomoxys)

(d) Pests of sugar cane (pyrilla perpusiella), oil seed (achaea janata) and rice (sitophilus oryzae).

(e) Tramsgemoc amo,a;s/

(f)Medical biotechnology, human genetic disease and genetic counseling gene therapy.

(g) Forensic biotechnology.

5. Biostatistics: biostatistics:- designing of experiments; null hypothesis; correlation, regression, distribution and measure of central tendency, chi square, student t-test, f-test (one-way & two-way f-test)"

6. Instrumental methods:-

(a) Spectrophotometry, phase contrast, and fluorescence microscopy, radioactive tracer, ultra centrifuge, gel electrophoresis, PCR, ELISA, FISH and chromosome painting.

(b) Electron microscopy (TEM, SEM).

Paper-2

1. Cell biology:

(a) Structure and function of cell and its organelles (nucleus, plasma membrane, mitochondria, golgibodies, endoplasmic reticulum, ribosomes and lysosomes), cell division (mitosis and meiosis), mitotic spindle and mitotic apparatus, chromosome movement, chromosome type polytene and lambrush, organization of chromatin, heterochromatin, cell cycle regulations.

(b) Nucleic acid topology, DNA motif, DNA replication transcription RNA processing, translation, protein folding and transport.

2. Genetics:

(a) Modern concept of gene, split gene, genetic regulation, genetic code.

(b) Sex chromosomes and their evolution, sex determination in Drosophilla, and man.

© Mendel's laws of inheritance, recombination, linkage, linkage, multiple alletes, genetics of blood group, pedigree analysis, hereditary diseases in man.

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(d) Mutations and mutagenesis:

(e) Recombinant DNA technology; plasmid, cosmid, artificial chromosomes as vectors, transgenic dna cloning and whole animal cloning (principles and methods).

(f) Cloning technology, plasmids and cosmids as vectors, transgenics, transposons, dna sequence cloning and whole animal cloning (principles and methodology).

(g) Gene regulation and expression in prokaryotes and eukaryotes.

(h) Signal molecules, cell death, defects in signaling pathway and consequences.

(i) RFLP, RAPD and AFLP and application of RFLP in DNA finger printing ribozyme technologies, human genome project, genomics and protomies.

3. Evolution:

(a) Theories of origin of life.

(b) Theories of evolution; natura selection, role of mutations in evolution, evolutionary patterns, molecular drive, mimicry, variation, islation and speciation.

(c) Evolution of horse, elephant and man using fossil data.

(d) Hardy-weinberg law,

(e) Continental drift and distribution of animals.

4. Biostatistics: Zoological nomenclature; international code; cladistics molecular taxonomy & biodiversity.

5. Biochemistry:

(a) **Structure and role of carbohydrates, fats, fatty acids and cholesterol proteins, amino acids, nucleic acids;** bioenergetics.

(b) Glycolysis and krebs cycle, oxidation and reduction, oxidative phosphorylation; energy conservation and release, atp, cyclic amp - its structure and role.

(c) Hormone classification (steroid and peptide hormones), biosynthesis and function.

(d) **Enzymes;** types and mechanisms of action;

(e) Vitamins and co-enzymes.

(f) Immunoglobulin and immunity.

6. Physiology (with special reference to mammals):

(a) Composition and constituents of blood; blood groups and rh factor in man; factors and mechanism of coagulation iron metabolism, acid-base balance, thermo regulation, anticoagulants.

(b) **Haemoglobin;** composition, types and role in transport of oxygen and carbone dioxide.

(c) **Digestion absorption:** role of salivary glands, liver, pancreas and intestinal glands.

(d) **Excertion:** nephron and regulation of urine formation; osmo-regulation and excretory product.

(e) Types of muscles, mechanism of contraction of skeletal muscles, effect of exercise on muscles.

(f) Neuron, nerve impulse-its conduction and synaptic transmission; neurotransmitters.

(g) Vision, hearing and olfaction in man.

(h) Physiology of reproduction, puberty and menopause in human.

SYLLABUS TO BE COVERED

6. Developmental biology:

(a) Gametogensis; spermatogenesis, composition of semen, in vive and in vivo capacitation of mammalran sperm oogenesis, totipotency; fertilization, morphogenesis and morphogen, blastogenesis, establishment of body axes formation, fate map gestulation in frog and chick; genes in development in chick, homeotic genes, development of eye and heart, placents in mammals.

(b) Cell lineage, cell-tocell interaction, genetic and induced teratogenesis, role of thyroxine in tontrol of metamorphosis in amphibian, paedogenesis and neoteny, cell death, aging.

(c) Develpmental genes in man,in vitro fertilization and embryo transfer-cloning.

(d) Stem cells; source, types and their use in human welfare.

(e) Biogenetic law.

Note

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OUR TOPPERS

ALOK RANJAN GHOSH
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GAGANDEEP SINGLA
AIR 85, Marks 355

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Marks 337

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