Syllabus for UPSC Indian Forest Services Examination

Zoology Paper I

The Scope of the Syllabus for optional subject papers for the examination is Broadly of the Honours Degree level i.e. A level Higher than the Bachelors Degree and lower than the Masters Degree. In the case of Engineering subjects, the level corresponds to the Bachelors Degree.

There will be no practical examination in any of the subjects.

Optional Subjects

Total number of questions in the question papers of optional subjects will be eight. All questions will carry equal marks. Each paper will be divided into two parts, viz. Part A and Part B, each part containing four questions. Out of eight questions, five questions are to be attempted. One question in each part will be compulsory. Candidates will be required to answer three more questions out of the remaining six questions, taking at least one question from each Part. In this way, at least two questions will be attempted from each Part i.e. one compulsory question plus one more.

Zoology

Paper-1

Section-A

1. **Non-chordata and chordata :**

(a) Classfication and relationship of varous phyla upto 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, and Leishmania.

(c) *Porifera :* Skeleton, canal system and 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 relation to man.

(f) *Nemathelminthes :* General features, life history and parasitic adaptation of *Ascaris;* nemathelminths in relation to man.

(g) *Annelida :* Coelom and metamerism; modes of life in polychaetes; general features and life history of nereis (*Neanthes*), earthworm (*Pheretima*) and leach (*Hirudinaria*).

(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 organization in insects (termites and honey bees).

(i) *Mollusca :* Feeding, respiration, locomotion, shell diversiy; general features and life history of Lamellidens, Pila 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.

(l) *Pisces :* Scales, respiration, locomotion, migration.

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

(n) *Reptilia :* Origin of reptiles; skull types; status of Sphenodon and crocidiles.

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

(p) *Mammalia :* Origin of mammals; denitition; general features of egg-laying mammals, pouched-mammals, aquatic mammals and primates; endocrine glands and other hormone producing structures (pituitary, thyroid, parathyroid, adrenal, pancreas, gonads) and their interrelationships.

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

Section- B

1. **Ecology :**

(a) Biosphere: Biogeochemical cycles, green-houses effect, ozone layer and its impact; ecological succession, biomes and ecotones.

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

(c) Conservation of natural resources- mineral mining, fisheries, aquaculture; forestry; grassland; wildlife (Project Tiger); susainable production in agriculture-integrated pest management.

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

II. **Ethology :**

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

(b) Role of hormones in drive; role of pheromones in alarm spreading; crypsis, predator detection, predator tactics, social behaviour in insects and primates; courtship (Drosophila, 3-spine stickleback and birds).

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

(d) Methods of studying animal behaviour.

III. **Economic Zoology :**

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

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

(c) Cattle and livestock diseases, their pathogens (helminths) and vectors (ticks, mites,Tabanus, Stomoxys)

(d) Pests of sugar cane (Pyrilla perpusiella), oil seed (Achaea janata) and rice (Sitophilus oryzae).

IV. **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).

V. **Instrumental methods :**

(a) Spectrophotometry, flame photometry, Geiger-Muller counter, scintiliation counting.

(b) Electron microscopy (TEM, SEM).

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