SEMESTER – III

Core Course (CC- 12): Vertebrate Endocrinology Full Marks – 70
Time : 3 hrs
Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions(Four to be answered) of 5 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.
Time: 3 hrs.

Unit- I

1.1 Aims and scope of endocrinology
1.2 Hormones as messengers
1.3 Chemical nature and gross features of hormones
1.4 Neuro-endocrine system and neurosecretion
1.5 Hypothalemic control of endocrine system

Unit- II

2.1 Hormones involved in reproduction
(a) Seasonal breeders
(b) Continuous breeders
2.2 Hormonal regulation of reproductive cycle
(a) Ovarian cycle
(b) Menstrual cycle
(c) Oestrus cycle

Unit-III

3.1 Biosynthesis of steroid hormones
3.2 Biosyntheses of amino acid derived hormones (T4, Epinephrine)
3.3 Biosynthesis of simple peptide hormones. Pre and Prohormones.

Unit- IV Hormone Receptors:

4.1 β-adrenergic receptor
4.2 Insulin receptor
4.3 Steroid hormone receptor

Unit-V: General principles of hormone actions (signal transduction)

5.1 Second messenger concept [G proteins, Nucleotides (cAMP, cGMP), Calcium, Calmodulin, Phospholipids]
5.2 Lipid soluble hormones and intracellular receptor
5.3 Lipid insoluble hormone and intracellular signalling

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SEMESTER – III

Core Course (CC- 13): Animal Behaviour Full Marks – 70

Time : 3 hrs

Questions to be set in three parts representing all the five units. Part A will consist of 10 objective questions of 2 marks each. Part B will consist of five short questions(Four to be answered) of 5 marks each. Part C will consist of five questions (three to be answered) of 10 marks each.

Time: 3 hrs.

Unit-I: Basics of Animal Behavior

1.1Ethology- Definition, Branches, Significance

1.2Approaches and methods in the study of Behavior

1.3Patterns of Behavior-

(a) Innate behavior- Kinases/ Taxes, Simple reflex, Comparison of reflex and complex behaviors, Instinct and, Motivation

(b) Learned behavior- Habituation, Imprinting, Conditioned reflex, Trial & error learning, Reasoning and Cognition

Unit II: Social Behavior

2.1Social behavior of insects (Honey bees, Ants and termites)

2.2 Schooling in fish, Flocking in birds,

2.3 Social organization of Primates

2.4 Parental care in fishes

2.5 Altruism: Reciprocal altruism, Inclusive fitness, group selection, and Kin – selection

Unit. III: Reproductive Behavior

3.1 Evolution of sex and reproductive strategies

3.2 Mating system

3.3 Courtship & Parental Behaviors: Parental care and parental Investment

Unit IV. Biological Rhythms

4.1 Circadian, Circannual, Lunar, Tidal and Epicycles

4.2 Navigation including orientation

4.3 Migration of fishes and Birds

Unit V. Control of Behavior

5.1Neural control of behaviour

5.2Hormones and Behavior

5.3 Ecological aspects of behavior: Habitat selection, Optimal foraging theory, and Aggressive behavior

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SEMESTER - III

Core Course (CC- 14) Practical

Time : 6 hrs

Full marks – 70

1. Any one of the immunological experiments — 10
   (a) Determination of blood group using ABD antisera
   (b) Preparation of blood film and identification of blood cells of immunological importance
   (c) Hormonal assessment of T3/Testesterone/oestrogen by ELISA reader

2. Identify and comment upon the given spots — 10
   (a) Endocrinological slides-03
   (b) Embryological slides -02

3. Prepare a permanent mount of chick embryo or — 10
   Identify and comment upon the exposed endocrine glands in a mammal

4. Comment upon the behavioural aspects of specimens provided — 10
   (any two)
   (a) Parental care (Hippocampus, Cichilids, Alytes, Hyla, Ichthyophis)
   (b) Caste system (Honey bee/termites/ants) and its significance
   (c) Dance as means of communication in honey bees

5. Identification and comment upon the given embryonic stages — 10
   (any two)

6. Class record — 10

7. Viva voce — 10

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List of Elective Courses (EC):

(1) Cell and Molecular Biology (EC-1A & 2A)
(2) Fish and Inland Fisheries (EC-1B &2B)
(3) Environmental Biology (EC-1C & 2C)
(4) Entomology (EC-1D &2D)
(5) Parasitology (EC-1E &2E)
(6) Cytogenetics (EC-1F &2F)
(7)Comparative Endocrinology (EC-1G & 2G)

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