B. Sc. IV Semester

Z- 401. Paper I: Animal Diversity - IV
   (Pisces to Mammalia and Comparative Anatomy)
Z- 403. Practical: Exercise based on papers I and II.
University of Kota, Kota

B.Sc. – IV Semester (Zoology) Examination- 2019

Z - 401 Paper I: Animal Diversity IV
(Pisces to Mammalia and Comparative Anatomy)

UNIT-I
(Fishes)
1. Pisces: Differences between cartilaginous and bony fishes; Latimaria; Dipnoans, aquatic adaptations in fishes. General morphology of Scoliodon and Labeo rohita; types of scales and fins in fishes.
2. Pisciculture: Introductory knowledge of Pisciculture; important fresh water and marine fishes as food.

UNIT-II
(Tetrapoda –I)

UNIT-III
(Tetrapoda-II)
1. Aves: Flight mechanism, flight adaptations, perching mechanism, migration, Archaeopteryx as a connecting link.
2. Mammalia: oviparity; ovo-viviparity and viviparity in mammals; adaptive radiation; convergent evolution of placential and Australian mammals.

UNIT-IV
(Comparative Anatomy of Vertebrates-I)
Comparative anatomy of the following organ systems of Scoliodon, Rana, Varanus, Columba and Oryctolagus:
1. Integument and integumentary derivatives.
2. Alimentary canal and accessory digestive glands.
3. Respiratory organs.

UNIT-V
(Comparative Anatomy of Vertebrates-II)
Comparative anatomy of the following organ systems of Scoliodon, Rana, Varanus, Columba and Oryctolagus:
1. Sense organs.
2. Heart, aortic arches and their evolution.
3. Urinogenital system (pro-, meso- and meta-nephric kidney and genital ducts in male and female vertebrates).

UNIT- I
1. Introduction, Significance and history of science of behaviour, Branches of Ethology.
2. Methods of studying animal behavior, Nervous system and behaviour.
3. Hormones (including pheromones) and behaviour.

UNIT- II
1. Patterns of behaviours.
2. Biological clocks: Circannual, Circatidal, Circalunar, circasyzygic clocks and circadian rhythms.
3. Orientation; Migration of Animals (especially of fishes and birds)

UNIT- III
1. Communication: types and significance.
2. Feeding behaviour; Searching of food in Honey bee, rhesus monkey and langur; Antipredator behaviour.

UNIT- IV
1. Social behaviour and social organizations.
2. Motivation and Learning behavior
3. Reproductive (Courtship and mating) and Parental behaviour.

UNIT- V
1. Economic Zoology: definition, scope and importance.
2. Harmful Animals - Parasites, pests and vectors: pathogenicity, including diseases, causes, symptoms and control.

Z – 403 Practical (based on Z – 401 and Z – 402)
1. Study of museum specimens / models / chart / photograph:
2. **Dissection:** Through Chart / Model / Photograph / CD. 
   *Any bony fish*: External features, general anatomy, afferent and efferent branchial vessels, brain, cranial nerves, eye ball, its muscles and innervations, internal ear, urinogenital system.

3. **Permanent mounting:**
   Cycloid and ctenoid scales, striated and non-striated muscle fibers, filoplume, placoid scales.

4. **Osteology:**
   A comparative study of articulated and disarticulated (original / artificial) bones of frog, *Varanus*, fowl and rabbit.

5. **Animal Behaviour:**
   a. Thigmotactic, phototactic, and chemotactic response of Paramecium.
   b. Antennal grooming in cockroach.
   c. Geotactic response in *Triboleum* and earthworm.
   e. Social behavior of monkey/deer/bees/termite/langoors.
   f. Food preference in any insect.
   g. Observation and description of animals in wild/captivity and submission of report of this work.

**Skeleton paper and Marking scheme**

Duration: 4 Hrs.  

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<td>Q2. Minor dissection</td>
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<td>Q3. Slide preparation</td>
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<td>Q4. Exercise on animal behavior</td>
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<td>Q5. Spotting (2X10)</td>
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<td>Q6. Class record</td>
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<td>Q7. Viva-voce</td>
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