

THIRD YEAR TDC SCIENCE, 2018-19

ZOOLOGY - PRACTICAL

Duration : 5 Hrs.

M.M. :75

<u>S.No</u>	<u>Exercise</u>	<u>Regular</u>	<u>Ex-Students</u>
1	Dissection	18	25
2	Ecology/ Ethology exercise	09	12
3	Physiological and Biochemical exercise	08	08
4	Spots (1-10)	20	20
5	Viva-voce	10	10
6	Record	10	--
Total :-		75	75

Major Dissection marks will be given only if virtual dissection is available otherwise marks may be given according to availability of dissection alternate.

ETHOLOGY AND EVOLUTION.

- 1 Habituation in earthworm/mosquito larvae.
- 2 Feeding behaviour of housefly/stored product pest.
- 3 Antennal grooming behaviour of cockroach.
- 4 Trial and error and latent learning in rat /mice.
- 5 Phototaxis and chemotactic behaviour in *Paramecium*.
- 6 Visit to a zoo/natural habitat of wild animals.
- 7 Demonstration of social behaviour by honey bee colony.
- 8 Adaptive modifications in the feet of birds.
- 9 Adaptive modification in the beak of birds.
- 10 Adaptive modification in the mouth parts of insects.
- 11 To study nests and nesting habits of the birds and social insects.

- 12 To study the phototaxis behavior in insect larvae.
- 13 Study of circadian functions in animals (daily eating, sleep and temperature patterns)

BIOCHEMICAL, PHYSIOLOGICAL AND ECOLOGICAL EXERCISES

- 1 Various biochemical tests of
 - (a) Proteins
 - (b) Carbohydrates
 - (c) Lipids
- 2 Action of salivary amylase.
- 3 RBC and WBC counts.
- 4 Estimation of Haemoglobin.
- 5 Blood groups (ABO and Rh).
- 6 Measurement of blood-pressure.
- 7 Abnormal and normal values of constituents of urine.
- 8 Water analysis: pH, alkalinity, dissolved oxygen, chloride and transparency.
- 9 Soil analysis: texture, moisture, organic and inorganic contents.

DISSECTIONS:

- **Digital animals:** Virtual dissection will be done (if facility of virtual is made available by University).
- Virtual dissection of Scoliodon cranial nerves and brain

MUSEUM SPECIMENS/ SLIDES SHOWING ADAPTATIONS :

Students are required to write about specific adaptations of following animals in relation to habit and habitat only:

- Cursorial** : *Acinonyx jubatus, Equus caballus, Moschus moschiferous.*
- Flight** : *Columba livia, Pteropus, Draco, Exocoetus, Papilio.*
- Arboreal** : *Chamaeleon, Hyla, Presbytis.*
- Aquatic** : *Physalia, Chiton, Hydrophis, Labeo Anguilla, Notopterus*
- Fossorial** : *Pheretima, Tereido, Chaetopterus, Talpa, Lepus, Ichthyophis, Naja.*
- Parasitic** : *Taenia, Fasciola, Enterobius, Ascaris, Schistosoma, Hirudinaria, Pediculus, Ixodes.*

- The teacher concerned will provide e-materials to practical in the form of video or demonstrations or written materials including dissections.

REFERENCE BOOKS (LATEST EDITIONS):

ANIMAL PHYSIOLOGY :

- 1 William S. Hoar, General and Comparative Physiology, Prentice Hall of India Pvt. Ltd.
- 2 Wood, D.W., Principles of Animal Physiology.
- 3 Prosser CL., Comparative Animal Physiology, Satish Book Enterprise.
- 4 Eckert, Animal Physiology. (W.H. Freeman).
- 5 Ganong : Review of Medical Physiology (Lange).

BIOCHEMISTRY :

- 6 Stryer, L : Biochemistry (Freeman)
- 7 Conn et al : Outlines of Biochemistry (Wiley)
- 8 R.K.Murray et al, Harpers Biochemistry, Lang Medical Book.

IMMUNOLOGY

- 9 Roitt I : Essential Immunology (ELBS)
- 10 Kuby : Immunology (W.H. Freeman).

ECOLOGY

- 11 Odum : Ecology (Amerind).
- 12 Odum : Fundamentals of Ecology (Saunders).
- 13 Ricklefy : Ecology (W.H.Freeman).

BIostatISTICS :

- 14 Green, R.H.Sampling design and statistical methods for environmental biologists. John Wiley and Sons New York.
- 15 Snedecor, G.W. and W.G. Cochran. Statistical methods. Affiliated East-West Press, New Delhi (Indian Ed.)
- 16 P.N.Arora and P.K.Malhan, Biostastics, Himalaya Publishing House, Bombay.

ETHOLOGY

- 17 Drickamer & Vessey: Animal Behaviour, Concepts, Processes and Methods (Wadsworth).
- 18 Grier : Biology of Animal Behaviour (Mosby College)
- 19 Immelmann : Introduction to Ethology (Plenum Press)
- 20 Lorenz : The Foundation of Ethology (Springer-Verlag)
- 21 Manning : An Introduction to Animal Behaviour (Addison-Wesley)
- 22 Reena Mathur : Animal Behaviour, Rastogi Publications, Merrut.

EVOLUTION :

- 23 Dobzhansky, Ayala, Stebbins & Valentine : Evolution (WH Freeman)
- 24 Dobzhansky : Genetics and Origin of species (Columbia University Press)
- 25 Major : Population, Species and Evolution
- 26 White : Animal Cytology and Evolution.
- 27 Moody : Introduction to Evolution
- 28 Savage : Evolution (Holt, Reinhart and Winston).

PRACTICAL :

- 29 Verma, PS, A manual of practical Zoology Vertebrates S.Chand and Co. Ltd., Ram Nagar, New Delhi(English and Hindi Editions).
- 30 Lal, SS : Practical Zoology Vertebrates, Rastogi Publication, Meerut(English and Hindi Editions).
- 31 Verma PS & Srivastava PC, Advanced Practical Zoology, S.Chand & Co.