

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FOURTH SEMESTER EXAMINATION, JUNE 2022

SECOND YEAR [BATCH 2020-23]

ZOOLOGY (HONOURS)

Paper : IX [CC9]

Date : 23/06/2022

Time : 11 am – 1 pm

Full Marks : 50

Answer **any five** questions:

[5×2]

1. a) 'Ghrelin is known to be an orexigenic hormone' – comment.
b) What is catecholamine?
c) What are MIT and DIT?
d) Define short and long day breeders.
e) What is GLUT. Mention its significance.
f) What do you mean by the second messenger system?
g) Define trophic and local hormones with examples.
h) State how bioluminescence can be used as a tool for pest management.

Answer **any four** question:

[4×10]

2. a) 'Gut microbiota of different carnivorous and herbivorous animals has some distinctive features' – elaborate with examples.
b) State the important features of Enteric Nervous System.
c) State a functional distinction between prebiotics and probiotics.
d) Name a few CNS active molecules whose functions are being somehow regulated by gut microbiome in some humans. [3+4+1+2]
3. a) State the roles of DBH and PNMT in the biosynthesis of catecholamines.
b) Illustrate the structure of insulin with a suitable diagram.
c) What is 'bitting off' and 'splitting out' in thyroid hormone biosynthesis? [(2+2)+(2+2)+2]
4. a) Describe the role of vitamin D in calcium metabolism.
b) How does the glucose homeostasis maintained by glucagon and insulin? [4+(3+3)]
5. a) Mention the steps of oxidation of D-Luciferin producing finally the 'Biological Light' in fireflies.
b) Enumerate the significance of blue-green luminescence found in the larvae of *Arachnocampa*.
c) Elucidate with a diagram how electrocytes generate electrical output in *Electrophorus*. [3+2+(4+1)]
6. a) With a flow diagram enumerate the mechanism of hormone action where second messenger is Ca^{++} -DAG.
b) Mention four unique characters of pheromones.
c) How does positive long loop feedback system is related to hypothalamo-hypophyseal-thyroidal axis?
d) Differentiate between allomones and kairomones. [3+2+3+2]

7. a) What is RTK? Mention its action with special reference to insulin signaling.
b) What is the utility of heat shock proteins in the mechanism of steroid hormones?
c) Define pituitary and mamillary bodies.
d) Describe three types of stimulations by which hormones can get secreted from an endocrine organ. [3+2+2+3]
8. a) Differentiate between estrous and menstrual cycles.
b) What is LH surge? Why is LH surge responsible for ovulation?
c) State four important functions of pheromone.
d) Compare hormone with enzyme and nervous system. [2+3+2+3]

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