PG/IIIS/ZOO-301/15

M.Sc. 3rd Semester Examination, 2015

ZOOLOGY

PAPER – ZOO-301 (Gr.-A & B)

Full Marks : 40

Time : 2 hours

Answer **all** questions

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Write the answers to questions of each Group in separate books

GROUP – A

(*Entomology*)

1. Answer any *two* of the following : 2 × 2

   (*a*) With a labelled diagram, mention different segments with associated structures in a developing insect's head.

(*b*) Why insect's midgut is the most sensitive part of insect's digestive tract ?

(*c*) Highlight different ecological services rendered by insects.

(*d*) Enlist different major groups of aquatic insects.

2. Answer any *two* questions of the following : 4 × 2

(*a*) Briefly explain the structure and function of peritrophic membrane.

(*b*) Schematically highlight different groups of insects (orders and families) having pest importance.

(*c*) Briefly discuss on the adaptibility of aquatic insects against oxygen availability.

(*d*) Enlist different light producing insects with a comment on the significance of bioluminescence in those insects life.

3. Answer any *one* of the following : 8 × 1

(*a*) What is pheromone ? Explain the role of pheromones in the reproduction of social insects, add a note on the types of insect's pheromones. 1 + 4 + 3

(*b*) What is neuro-haemal system ? What are different components constituting this system ? Briefly explain neurohaemal integration during metamorphosis in insects. 1 + 3 + 4

GROUP – B

(*Animal Physiology*)

4. Answer any *two* questions from the following : 2 × 2

(*a*) Illustrate the cascade of steps in Blood Clotting.

(*b*) Define shivering.

(*c*) Mention the circulatory changes occuring in diving mammals in response to hypoxia.

(*d*) Name the disease states caused by deficiency and excess of each sodium and potassium in the body.

5. Answer any *two* questions from the following : 4 × 2

(*a*) Explain countercurrent heat exchange system.

(*b*) Explain the phases of an ECG with representations in the graph having ECG.

(*c*) Graphically represent the pressure changes during blood flow starting from left ventricle to venules.

(*d*) Describe the role of SA node with the help of a diagram.

6. Answer any *one* question from the following : 8 × 1

(*a*) (*i*) Explain the relationship between BMR and thyroid hormones. 4

(*ii*) What is the concentration of haemoglobin and RBCs in blood ? What is meant by allosteric inhibition and co-operative binding of Haemoglobin ? 1 + 2 + 1

(*b*) (*i*) Describe Frank-Starling mechanism. 4

(*ii*) Compare the RDAs of Vitamin C and Niacin in an adult man. Name few thermostabile vitamins. State two important functions of Niacin. 1 + 2 + 1