M.Sc. 1st Semester Examination, 2019

ZOOLOGY

PAPER – ZOO-102

Full Marks : 40

Time : 2 hours

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

(*Histochemistry*)

1. Answer any *two* questions : 2 × 2

(*a*) What are the physical methods of fixation and cite examples.

(*b*) 'Orange *G* is a Azo-dye'—Why ?

(*c*) Name the enzymes that are involved in tissue autolysis.

(*d*) Write notes on : Vital stain.

2. Answer any *two* questions : 4 × 2

(*a*) How fluorescent markers react with antibody molecules in immunohistochemical reaction ? 4

(*b*) State the photochemistry for colouration of dye molecules with proper explanation. 4

(*c*) Name two chemical groups present in a dye. Explain their functions. 4

(*d*) Write short notes on : 2 × 2

(*i*) Mordent dye

(*ii*) Vascular perfusion technique.

3. Answer any *one* question : 8 × 1

(*a*) How fluorescein isothiocyanate (FITC) molecules reacts with primary antiserum ? How biotinylated HRP (Horseradish peroxidase) react with avidin-biotin complex (ABC)—Explain. 3 + 5

(*Continued*)

(*b*) Write notes on (any *four*) of the following : 2×4

(*i*) FAA-fixative

(*ii*) Microwave fixation

(*iii*) Metachromatia

(*iv*) Auxochrome

(*v*) Acid phosphatase demonstration

(*vi*) Cryo-fixation

(*vii*) DPX.

GROUP–B

(*Animal Physiology*)

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

(*a*) Define A-selection. Distinguish acclimatization from Adaptation.

(*b*) How does the thermogenic activity of T3 hormone differ from that of T4 ? Define 'BAT metabolism'.

(*c*) State the features of Free radicals ?

(*d*) "Animals may have more than one means of surviving in hypoxia." – Explain.

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

(*a*) Who proposed the concept of GAS ? Describe the phases of GAS with diagram. 1 + 3

(*b*) How can a countercurrent system supplement the peripheral dilation and constriction ? What is CEWL ? 3 + 1

(*c*) Differentiate between oxyhemoglobin and oxymyoglobin. Describe the factors directly regulating Blood volume by means of cardiac output. 2 + 2

(*d*) Illustrate the cardiac conduction pathway. Which parts of the heart are non-conducting ? 3 + 1

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

(*a*) Describe the measurement methods for an ECG. Elaborate the sympathetic and parasympathetic stimulation of heart rate. 4 + 4

(*b*) Elaborate the mechanism of coordination between Anterior and Posterior hypothalamus in relation to thermoregulation. Add the role of different neurotransmitters and ions involved in such pathway. 4 + 4
