Bangabasi College

B. Sc. Part II Test Examination, 2014

ZOOLOGY HONOURS

*Candidates are required to use **Separate Answer Scripts** for Each Group*

Full Marks: 100 Time: 4 Hours

Answer Question Number 1 (Compulsory) and 3 from each group

1. Answer any five of the following: 2 × 5 = 10
   a. What do you mean by Pseudobranch?
   b. Write down the justification of the name "Cephalochordata"
   c. What are keratin-fibre horn and prong horn?
   d. What do you mean by "Lophodont"? Give example.
   e. Mention the characteristics of the cell present in a normal thyroid follicle?
   f. What is Exopthalmic goiter and Grave's disease.
   g. Distinguish between Holocrine and Merocrine secretion.
   h. Distinguish between Involution and Invagination.
   i. Differentiate between Spiral cleavage and Radial cleavage.
   j. State the significance of Nieuwkoop centre.

Paper III Unit I : Animal Biodiversity II: Chordates

(Answer *any three* questions from following)

2. (a) What is Foramen of Panizza?
   (b) What are the special features of heart of Hagfish? Describe the functioning of Aortic arches in Mammal.
   (c) Comment on Pulmocutaneous artery of Frog. 2+2+4+2= 10

3. Place the following animals (any four) into their respective class, subclass or order with reasons mentioning at least two characters for each taxon (For Amphibia and Reptilia upto Order and upto Subclass for the rest) 2.5X4=10
   (a) *Lates* sp.
   (b) Amphioxus
   (c) *Hyla* sp.
   (d) Owl
   (e) Elephant.

4. (a) How does branchial suction pump helps in dual respiration?
   (b) Differentiate between holobranch and hemibranch condition.
   (c) How Streptostylism is applicable in biting mechanism of Poisonous snakes. 4+2+4= 10

5. (a) State the different forms of feathers in Pigeon with their significance.
   (b) Draw and describe the structure of a typical mammalian hair. Delineate its functional role. 6+4+2 = 10

Or

   (a) Mention the prerequisites for bird flight.
   (b) Illustrate and discuss – upstroke, down stroke and transitional movements during flight of a Carinatae.
   (c) Write down the hormonal impacts of birds during migration. 2.5+5+2.5 = 10

6. (a) What do you mean by retrogressive metamorphosis ?
   (b) Describe the importance of Ascidian tadpole in retrogressive metamorphosis.
   (c) Discuss about the excretory or circularoty system of Amphioxus. 2+4+4 = 10

Or

(a) How different accessory respiratory organs help to combat the altered environmental conditions in Devonian period.
(b) Differentiate between Ass and Cow.
(c) What is echolocation? Elaborate with suitable examples the ecolocating techniques in bats.
3+2+(1+4) = 10

Paper III Unit II : Histology,Endocrinology & Reproductive Biology

(Answer *any three* questions from following)

7 (a) Mention the steps of biosynthesis of Thyroid hormones with special reference to enzymes involved in the process.
(b) Mention the steps of Δ4 pathway of biosynthesis of Testosterone or Estradiol with special reference to enzymes involved in the process. 5+5= 10

8. (a) Describe the role of JH and Ecdyson in insect metamorphosis.
(b) Elucidate the mechanism of action of a hormone where IP3 and DAG are the second messenger. 5+5= 10

9. (a) State the principle of RIA. Explain solid phase RIA. What is its application?
(b)Name two enzyme and substrates used in ELISA.
(c) Which technique of ELISA is used to detect the presence of serum antibodies against HIV Describe it. (2+2+1) + (2+3) = 10

10. (a) Discuss the role of hormones in maintaining Calcium homeostasis *or* Glucose homeostasis.
(b) Describe the mechanism of action of Steroid hormones. 5+5 = 10

11. (a) Describe histology of a typical hepatic lobule.
(b) Write note on JGA.
(c)What is Parafollicular cell? State its function. 4+3+2+1 = 10

Paper IV UNIT I : Developmental Biology

(Answer *any three* questions from following)

12. (a) State the process of formation of yolk sac.
(b) Distinguish between Spermiogenesis and Growth phase of oogenesis.
(c) Mention the significance of fate map. 5+3+2 = 10

13. (a) Classify placenta on the basis of the relationship between maternal tissue and foetal tissue.
(b) Mention the components of eye along with the sources of origin. Explain the inductive events occur during the development of eye in chick. 4+6 = 10

14. (a) How polyspermy is prevented during fertilization in Sea urchin?
(b) Compare the Blastula in frog and Chick. 6+4 =10

15. (a) Describe the Spemann and Mangold's classical transplantation experiment and comment on the observations derived from the experiment.
(b) Briefly describe the process of primary neurulation in Chick. 6+4 = 10

16. (a) Explain the term "Potency" What is the difference between Totipotent and Pluripotent stem cells. State the application of Embryonic Stem Cells in human welfare.
(b) Under what conditions *in vitro* fertilization is needed? State the advantages and disadvantages of embryo transfer. 6+4 = 10

Or

(a) Name two Cryoprotectants. Why they are being used in cryopreservation?
(b) Discuss the method of Cryopreservation of Embryo. 2.5+2.5+5 = 10