

# Bangabasi College

**B. Sc. Part II Test Examination, 2015**

## **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 three from each group*

1. Answer *any five* of the following: 2 × 5 = 10
- Mention at least two reptilian features found in birds.
  - What do you mean by Pseudobranch?
  - Write down the justification of the name "Cephalochordata"
  - Distinguish between Holocrine and Merocrine secretion.
  - Distinguish between Involution and Invagination.
  - Differentiate between Spiral cleavage and Radial cleavage.
  - State the significance of Nieuwkoop centre.
  - Distinguish between horn and antlers.
  - What is Zugunruhe?
  - Mention the characteristics of the cell present in a normal thyroid follicle?
  - What is Exophthalmic goiter and Grave's disease.

### **Paper III Unit I : Animal Biodiversity II: Chordates**

(Answer *any three* questions from following)

- 1(a) Mention the prerequisites for bird flight.  
(b) Illustrate and discuss – upstroke, down stroke and transitional movements during flight of a Carinatae.  
(c) Classify cheek teeth according to cusp pattern with examples. 2.5+5+2.5 = 10

*Or*

- (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

2. 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

*or*

- (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 2. (a)

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, (f) Crocodile, (g) Dolphin.

- 4.(a) Describe the structure of a ruminant stomach. How does camel differ in its rumination process from cow.  
(b) Draw and describe the structure of mammalian hair with its modification. (4+2)+4=10

**Paper III Unit II : Histology, Endocrinology & Reproductive Biology**

(Answer *any three* questions from following)

7. (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
8. (a) Mention the steps of biosynthesis of Aldosterone hormones with special reference to enzymes involved in the process.  
(b) Mention the steps of pathway of biosynthesis of Testosterone or Estradiol with special reference to enzymes involved in the process. 5+5= 10
9. (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
10. (a) Discuss the role of Insulin in Glucose homeostasis.  
(b) Describe the mechanism of action of Protein hormones. 5+5 = 10
11. (a) State the principle of ELISA. Explain competitive ELISA. What is its application?  
(b) Name two enzymes and substrates used in ELISA.  
(c) State the advantage and disadvantage of RIA and ELISA. (2+2+1+2+2+1) = 10

**Paper IV UNIT I : Developmental Biology**

(Answer *any three* questions from following)

12. (a) State the process of formation of allantois.  
(b) Distinguish between Spermiogenesis and Growth phase of oogenesis.  
(c) Mention the significance of fate map. 12.(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
- c. What is cryopreservation? What is its utility in human? Name two Cryoprotectants and state their roles. Discuss the method of Cryopreservation of Embryo. 2+3+2+3 = 10
13. (a) How polyspermy is prevented during fertilization in Sea urchin? Why capacitation is necessary?  
(b) Compare the Blastula in frog and Chick. 4+2+4 = 10
15. (a) Delineate the process of formation of placenta in human.  
(b) Name the components of eye along with the sources of origin. Explain the inductive events occur during the development of eye in chick. 6+4 = 10
16. (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