# Bangabasi College

## B. Sc. Part I Test Examination, 2016

## ZOOLOGY HONOURS

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. State the functions of Ctenidia in insects.
   b. State the function of Choanocytes.
   c. Differentiate barrier reef from that of fringing reef.
   d. Give salient feature and example of Trematode.
   e. What is pyranose and furanose sugar.
   f. What is Chloride shift?
   g. What is allosterism?.
   h. Name the end products of Glycolysis.
   i. What is code degeneracy?
   j. What is salutatory conduction of nerve impulse
   k. What do you mean by Osmoregulator and Osmoconformer. Give examples.
   l. What is Xic?

### Paper I Unit I : Animal diversity I: Non Chordates

(Answer *any three* questions from following)

2. (a) Define polymorphism. Write down the structure and function of dactylozooid and gonozooid.
   (b) Describe the role of algae in the formation of coral reefs. Write the importance of coral reefs in ecosystem. (2+1.5+1.5)+3+2= 10

3. Place the following animals (any four) into their respective systematic position with reasons mentioning at least two diagnostic feature of each taxon 2.5X4=10
   (a) *Cancer* sp.,(b) Sea hare.,(c) *Antedon* sp.,(d) *Taenia* sp.,(e) Blood worm,(f) *Plasmodium* sp.,(g) Bath Sponge.

4. (a) Illustrate the Nervous organization of a common Gastropod and characterize it.
   (b) Describe the respiratory structure of Spider. Add a note on the mechanism of respiration. 5+(3+2)= 10

5. (a) Discuss significance of the larval forms of echinoderm. State the characters of Brachiolaria larva.
   (b) Write short note on Tubefeet and Tiedmann's body. (4+3)+3=10

6. (a) Why a *Parameocium* known as heterokaryotic animal ?
   (b) Give an illustrated account of conjugation in *Paramoecium* sp.
   (c) Draw and describe the Leuconoid canal system and show the course of water current with the help of a flow chart. 1+4+5=10

### Paper I Unit II : Cell Biology and Genetics

(Answer *any three* questions from following)

7. a) Explain the fluid mosaic model of plasma membrane. b) What is endomitosis? c) What is nucleosome & mention its components. d) What is replisome? 3+2+3+2=10

8.(a) How sex determination mechanism of *Drosophila* is different from man? Justify your answer. (b)Distinguish between nullisomy & monosomy. What is Frameshift mutation? (c) Add a note on the role of msl protein in dosage compensation of Drosophila. 3+2+1+4=10

9. (a) Mention the expected sex of the following *Drosophila* flies as per the genic balance theory with proper explanation- 4X:4A, 1X:2A, 1X:3A, 2X:3A

(b) Explain briefly the role of "Xic" in dosage compensation in mammals with proper illustrations. 4+6= 10

10.a)Consider a, b, c are three recessive mutations in *Drosophila sp*. The data shown below are the result of a test cross in which $F_1$ female heterozygous for all 3 loci were crossed to male homozygous for all three recessive mutants.

\+ +=75
+ + c=348
+ b c=96
a + +=110
a b +=306
a b c 65

i) Construct a linkage map.
ii) What will be calculated I?
iii) Why D.C.O types are missing?
b)Write difference between complete and incomplete linkage? c)Write the name of different enzymes and proteins (step wise) in Holliday model. 5+2+3=10

11. (a) What is meant by Okazaki fragment?
(b) Why lagging strand is synthesized in small fragments?
(c) Cite names of 4 proteins involved in replication initiation. Describe their roles.
2+2.5+5.5=10

Or

(a)What is meant by co-dominance? Describe it with an example.
(b)What do you mean by Bombay phenotype?
(c)What do you mean by endoreplication?
(d)Distinguish between polytene puff and lampbrush loop. 3+2+2+3=10

**Paper II UNIT I : Biochemistry and Animal Physiology**

(Answer *any three* questions from following)

12. (a) Describe transport of carbon-di-oxide in R.B.C in blood (i) in the form of bicarbonate ion and (ii) in combination with hemoglobin and plasma proteins in mammals.
(b) Describe the mechanism of temperature regulation in man when the body is too hot or when the body is too cold. 5+5 = 10

13. (a) What is Michaelis- Menten constant?
(b) State its relation with velocity of enzyme action.
(c) How transferase enzymes work? Describe with example.
(d) Give two examples of co-enzyme. 2+2+2+3+1 = 10

14. (a) State the structure and functional significance of juxtaglomerular apparatus.
(b) Discuss the countercurrent mechanism of urine formation with the importance of ADH. 5+5 =10

15.(a) State the depolarization, repolarisation and hyperpolarisation phases of nerve impulse formation.(b)Discuss the phototransduction mechanism in the first layer of retina. 5+5=10

16. (a) Write a short note on protein complexity.
(b) A polypeptide chain is 200A° in length. Calculate the probable number of amino acids present in it. 4+6=10