End Semester Examination of Semester–III, 2015
Subject : ZOOLOGY (PG)
Paper : ZPGT–302 (Gr A + Gr B)
Full Marks : 40
Time : 2 Hrs

*The figures in the margin indicate the marks
corresponding to the question*

*Candidates are requested to give their answers
in their own word as far as practicable.*

Illustrate the answers whenever necessary

<u>*Use separate Answer scripts for Group A and Group B*</u>

<u>Group A (Full Marks : 20)</u>

Answer **Question No. 1** and
any one out of **Question No. 2** and **Question No. 3**

1. Answer **any five** question: 2×5=10

    i)   What type of genetic disorder may be found in sickle cell anaemia and hemophilia?

    ii) Mention the application of RNA interference.

    iii) Differentiate replicative and non-replicative transposons.

    iv) What do you mean by genetic imprinting?

    v)   What are silencers and give an example. $1\frac{1}{2}+\frac{1}{2}$

vi) 'C-valve paradox' – Why the term paradox is used?

vii) What do you understand by conservative site specific recombination?

viii) State the differences between SINES and LINES.

2. i) Sex lethal gene is known as pivot for sex determination in Drosophila.

ii) What is T_m and writhing number. $5+(2\frac{1}{2}+2\frac{1}{2})$

3. a) How HLH proteins regulate transcription in eukaryotes.

b) What is Cot analysis? Explain in brief the application of Cot analysis in genome sequencing. Mention the steps of Cot analysis. $5+(1+2+2)$

Group B (Full Marks : 20)

Answer **Question No. 1** and
any one out of **Question No. 2** and **Question No. 3**

1. Answer **any five** question: $2 \times 5 = 10$

i) Define Kin selection.

ii) Name the evolutionary forces disrupting Hardy-Weinberg equilibrium.

iii) What is relation between selective value and selection co-efficient?

iv) Define punctuated equilibrium.

v) Single nucleotide polymorphism (SNP) is one of the raw materials for evolution – justify.

vi) What are positive frequency dependent selection and negative frequency dependent selection?

vii) Define antagonistic coevolution.

viii) How do you define mass extinction?

2. What is Hardy-Weinberg Equilibrium? What are the main assumptions and prediction?

Allele A is dominant to allele a from following data calculate genotypic and allelic frequencies. Also comment whether the population is in equilibrium.

A–91 : aa 09

2+3+5

3. a) What is sexual selection? Discuss conflicts of interest between males and females. 1+4

b) What is molecular phylogeny? Briefly describe the distance matrix approach in reconstruction of molecular phylogeny. 2+3