

**2022**

**ZOOLOGY**

**[HONOURS]**

**(B.Sc. Sixth Semester End Examination-2022)**

**PAPER-C14T**

*Full Marks: 40*

*Time: 02 Hrs*

*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*

**Group A**

- 1. Answer any FIVE questions of the following: 5x2= 10**
- a) What is cladogram?
  - b) Write on founder effect and population bottle neck with suitable example.
  - c) What are the sources of inheritable variation in evolution?
  - d) What is molecular clock?
  - e) Difference between convergent and divergent evolution
  - f) What is heterozygote Superiority?
  - g) What is New-Darwinism?
  - h) What is red queen hypothesis?

**Group B**

- 2. Answer any FOUR questions of the following: 4x5 = 20**

(2)

- a) A population of 60 adult squirrels resides on Gope college campus and the frequency of G6PD allele among them is 0.70. Another population of squirrels is found in nearby sericulture farm and the frequency of the G6PD allele is 0.60. During rainy season 40 squirrels from the sericulture farm migrate to college campus for food and shelter. What will be the allele frequency of G6PD allele in the campus population after migration?
- b) Write down the principles of maximum parsimony and maximum likelihood in phylogenetic tree based evolution.
- c) Phenylketonuria is inherited as an autosomal recessive. About 1 in every 10,000 new-born caucasian infants is affected by this condition. If this population is in Hardy-Weinberg equilibrium, what percentage of the population are carriers?
- d) Distinguish between – Neanderthals and Modern man.
- e) What is allopatric speciation? Describe the process of allopatric speciation with example.
- f) Define extinction. What are the causes of extinction? What are the causes of extinction? What is the relation between speciation and extinction?

Group C

3. Answer any ONE questions of the following:  $1 \times 10 = 10$

- a) i)  $A \xrightleftharpoons[u]{\mu} a$  where  $\mu = 6 \times 10^{-7}$   
 $\nu = 6 \times 10^{-8}$

(3)

No other evolutionary forces are acting on the population, then What will be the equilibrium frequency of 'A' and 'a'?

ii) In a population, two alleles, A and a



if  $q=0.9$  in generation. What it would be in one generation later, under only mutation.

iii) What is Adaptive radiation? 3+5+2

b) Briefly describe the various kinds of isolating mechanisms which separate sympatric populations. 10

---