This question paper contains **4** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **1393**

Unique Paper Code : **2231502** **F-7**

Name of the Paper : **Concepts and Mechanisms of Evolution**

Name of the Course : **B.Sc. (H) Zoology-Erstwhile FYUP**

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all including

Question No. **1** which is compulsory.

1. (*a*) Define the following terms : 5

(*i*) Ring species

(*ii*) Genetic load

(*iii*) Pangenesis

(*iv*) Haldane rule

(*v*) Index fossil.

P.T.O.

(*b*) Differentiate between the following : 8

(*i*) Prosimians and anthropoids

(*ii*) Allopolyploidy and autopolyploidy

(*iii*) Missense and nonsense mutations

(*iv*) Transient polymorphism and balanced polymorphism.

(*c*) State the contribution of the following scientists : 4

(*i*) Lynn Margulis

(*ii*) Mary Leakey

(*iii*) T. Cech

(*iv*) Zuckerkandl and Pauling.

(*d*) Justify the following statements : 6

(*i*) Mutation and recombination lead to evolution

(*ii*) Change is not always necessary for species to persist

(*iii*) Though evolution is a slow process, some evolutionary events can occur rapidly.

(*e*) Fill in the blanks : 4

(*i*) 'Taung child' is the hominin fossil belonging to the species .....

(*ii*) ..... is the smallest unit of any evolutionary change or evolution to occur.

(*iii*) If individuals of genotype *aa* have relative chance of survival of 95% compared with 100% for *AA* and *Aa*, then the selection coefficient will have a value of ..... for *aa* individuals.

(*iv*) Books written by Charles Darwin are ..... and ..... .

2. Trace the evolutionary history of modern man from *Australopihecines* highlighting key modifications or changes during the course of evolution. 12

3. (*a*) How allopatric speciation is different from sympatric speciation ? Explain with examples.

(*b*) Explain different methods of fossilization. 6,6

4. (*a*) Discuss different types of selection with examples.

(*b*) In a large interbreeding human population, 84% individuals are Rh positive, due to the presence of a dominant allele. Determine the percentage of heterozygotes. 9,3

5. (*a*) Tabulate phylogeny of *Equus equus* and state the trends seen during its evolution.

(*b*) Describe in brief the patterns of evolution with examples. 6,6

6. (*a*) Discuss chemical origin of life with experimental proof in support of the same.

(*b*) Discuss with example the molecular evidence in support of evolution. 8,4

7. Write short notes on (any *three*) : 3×4=12

(*a*) Effects of mass extinction

(*b*) Macroevolution

(*c*) Genetic drift

(*d*) Artificial selection

(*e*) Neutral theory of evolution.