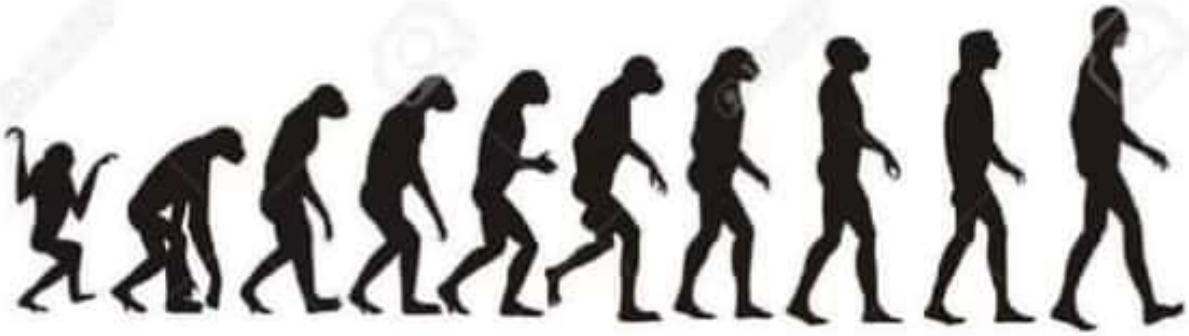
CHAP# 24 Evolution



S.No	Questions	Answers
3751.	**THE EVOLUTION OF THE CONCEPT OF THE EVOLUTION**	
3752.	**The evolution of the concept of evolution:**	

Scientist	Theory
Aristotle	The scala naturae
George Cuveir	Theory of catastrophism
James hutton and Charles lyell	Uniformilatarianism **ETEA-2014**
Lamark	Organism evolved through inheritance of acquired characteristic
Charles Darwin	Natural selection

3753.	**EVOLUTION OF EUKARYOTIC FROM PROKARYOTIC**	
3754.	**The process involved in the evolution of eukaryotic are:** 1. Endosymbiosis 2. Membrane infolding	
3755.	Fossils records indicate that eukaryote evolved from prokaryote somewhere between	1.5 to 2 billion years age
3756.	The eukaryotic organelles which are formed from prokaryote are	Mitochondria & chloroplast
3757.	Both the mitochondria and chloroplast have their own genes, circular DNA and RNA, and reproduce by binary fission independent to the host's cell cycle, this is evidence for	Endosymbiosis
3758.	Inner membrane of both mitochondria and chloroplast are more similar to	Prokaryotes rather than eukaryotes
3759.	The outer membrane of mitochondria and chloroplast resembles to	Eukaryotes
3760.	It can be said that first eukaryotic was formed from prokaryotic, symbiotic and	Multicellular interaction
3761.	**LAMARKISM**	
3762.	Lamark was first soldier then botanist and finally	Professor of zoology
3763.	Lamark gives an explanation of evolution based on the	Inheritance of

		acquired character
3764.	Structural change in the body of an organism involving a deviation from normal, induced in the life time of an individual due to certain changes in the environment i.e use or disuse of an organ	An acquired characters
3765.	**The examples given by Lamark to prove his theory:** • The legs and neck of giraffe become long and this habit passes from generation to generation in order to reach high leaves of trees. • Due to crawling of snakes the feet of snakes reduces.	
3766.	Lamarckism is the inheritance of acquired character, which is wrong in terms of	Principle of genetics
3767.	**DARWANISM**	
3768.	The types of Finches found at Galapogos islands are	13 types **ETEA-2018**
3769.	**Silent features of Darwin-Wallace theory are:** • Over production • Struggle for existence • Variation • Natural selection of survival of the fittest • Speciation or origin of new species	
3770.	**Struggle for existence may be three fold in nature:** 1. Intra specific struggle or rivals → competition between member of the same species 2. Inter specific struggle or pray or predation → competition between members of the different species 3. Extra specific struggle or environmental struggle → struggle against force of nature	
3771.	**Variation are of two types :** 1. Harmful variation → results an extermination 2. Useful variation →increases chances of survival	
3772.	The term "natural selection" was used by the	Darwin
3773.	The term "survival of the fittest" was used by the	Herbert selection
3774.	**NEO-DARWANISM**	
3775.	**The modern accepts five major causes of evolution:** 1. Gene and chromosomal mutation 2. Genetic recombination 3. Natural selection 4. Genetic drift 5. Reproductive isolation	
3776.	The genetic drift determines	Evolution
3777.	Structural that have same arrangement of parts and similar mode of development but different functions are called	Homologous structures
3778.	**Evidence of evolution from comparative anatomy:** The following bones consists of same number of bones, muscles, nerves and blood vessels arrangement in the same pattern with similar mode of development: **ETEA-2014** • Human hand • Bat's wing	

<table>
<tr><td></td><td colspan="2">• Cat's paw
• Horse front leg
• Front flipper of whale</td></tr>
<tr><td>3779.</td><td>Structures that have the same function and are specially alike, such as wings of birds, wings of butterfly and that of a flying lizard, such structures are called</td><td>Analogous</td></tr>
<tr><td>3780.</td><td>Archaeopteryx, the fossil bird, discovered from rocks in</td><td>East Germany</td></tr>
<tr><td>3781.</td><td>The bird which possessed both reptilian as well as avian characters</td><td>Archaeopteryx</td></tr>
<tr><td>3782.</td><td>Modern horse is called</td><td>Equs</td></tr>
<tr><td>3783.</td><td>A progression of fossils can be tracked back over 60 million years ago to the "drawn hose called"</td><td>Eohippus</td></tr>
<tr><td>3784.</td><td>The birds are</td><td>Glorified reptiles</td></tr>
<tr><td>3785.</td><td colspan="2">Evidence of evolution from vestigial organs:
1. Vestigial organs in human beings: ETEA-2012-16
• Nictatings membranes of eye
• Appendix
• Coccyx or tail bones
• Mammary glands of male
2. Vestigial organs in Whales:
• Hind limbs buried in flesh
3. Vestigial organs in Python:
• Hind limb</td></tr>
<tr><td>3786.</td><td colspan="2">Evidence of evolution from biochemistry:
The aspect of common origin are:
• DNA and RNA
• Protein synthesis process
• Occurrence of ATP</td></tr>
<tr><td>3787.</td><td colspan="2">Evidence of evolution from Molecular biology:
• DNA and RNA are mechanism of inheritance
• Gene activity
• Similar structures of genes
• Same mechanism of trapping and transforming energy</td></tr>
<tr><td>3788.</td><td colspan="2">Evidence of evolution from embryology:
• The embryo of adult vertebrates resemble one another
• Recapitulation theory of Von bear or biogenetic law of Hackle state that in development each individual tends to climb to its own family tree.
• Zygote can be supposed to be the unicellular ancestor and the gastrula a diploblastic ancestor in many organisms.</td></tr>
<tr><td>3789.</td><td>The process of two or more related species becoming more and more dissimilar is called</td><td>Divergent evolution</td></tr>
<tr><td>3790.</td><td>Similarity due to share developmental pathways</td><td>Homology</td></tr>
<tr><td>3791.</td><td colspan="2">The kit fox and the red fox provide an example of two species that have undergone divergent evolution. ETEA-2018
<table>
<tr><th></th><th>Kit fox</th><th>Red fox</th></tr>
<tr><td>Live in</td><td>Deserts</td><td>Farmland and forests</td></tr>
<tr><td>Colour</td><td>Sandy colour</td><td>Red colour</td></tr>
</table></td></tr>
</table>

	Ears | Large(help to excess body heat) | Small	
3792.	The process whereby organisms not closely related(not monophyletic), independently evolve similar trait as a result having to adopt to similar environments or ecological niches	Convergent evolution
3793.	Some animals have organs which perform same function and yet they are different in their origin and structure, they are called	Analogous organs
3794.	The cactus, which grows in the American desert resembles to the Euphorbia, which grows in the African desert resembles in their	Fleshly stem armed with spines
3795.	Similar nature of the flight/wings of insects, birds, pterosaurs and bats are example of	Convergent evolution
3796.	**Hardy-weinberg:** The Hardy-weinberg principle states that in a large randomly breeding population, allelic frequencies will remain in the same generation to generation in the absence of the following conditions: • Mutation • Natural selection • Infinite large population • All mating is totally random • All members of the population breed • There is no migration in or out of the population • Everyone produces the same number of offspring	
3797.	**Hardy-Winberg equilibrium equation** → $p^2 + 2pq + q^2 = 1$ p is frequency of dominant allele q is frequency of recessive allele Here p^2 is frequency of dominant allele(AA), 2pq is the frequency of the heterozygous(Aa) q^2 is the frequency of homozygous (aa) ones.	
3798.	When the population size is limited and by chance some alleles increase or decrease in frequency, this is called	Genetic drift
3799.	Unlike natural selection, mutation is randomly and Rarely produce to	environment
3800.	Evolution in its modern form was first explored by Charles Darwin in	1859
3801.	Descent in modification means	Evolution
3802.	The evolutionary process by which new biological species arises	Speciation
3803.	The time from which life is originated is some	3.5 billion years ago
3804.	**Types of speciation: ETEA-2015** 1. Sympatric speciation → rare 2. Allopatric speciation → most common form 3. Parapatric speciation → extremely rare	
3805.	The speciation phenomenon which occurs through polyploidy, in which an offspring or group of offspring will be produced with twice the	Number of normal chromosomes
3806.	A tetraploidy plants can fertilize	Itself and create offspring
3807.	A tetraploidy animal to reproduce, it Must find another	Animal of same species
3808.	The speciation which occur which population of species becomes	Geographically isolated
3809.	When the population are separated not by geographical barrier but an	Parapatric speciation