

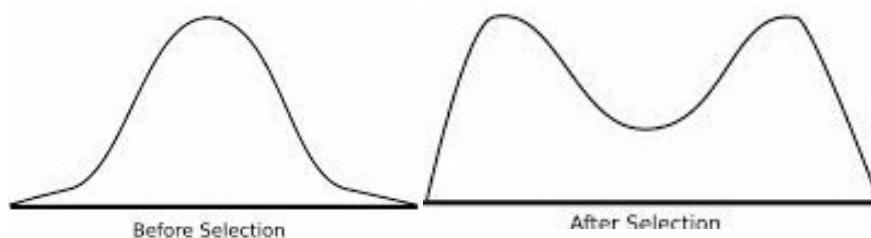
EVOLUTIONS

1. Darwin's fitness refers to
 - (A) Physical well-being of an organism or a species
 - (B) Reproductive fitness
 - (C) Ability of bacteria to resist antibiotics
 - (D) All of these

2. Find the incorrect statement
 - (A) The process of evolution of different species in a given geographical area starting from a point and radiating to other areas is called adaptive radiation.
 - (B) When more than one adaptive radiation appeared to have occurred in an isolated geographical area, it can be called as convergent evolution.
 - (C) Evolution is a stochastic process as it is based on chance events in nature and chance mutation in the organisms.
 - (D) Adaptive ability is acquired.

3. A sudden change in the frequency of alleles by chance in a small population is called:
 - (A) Gene flow
 - (B) Gene migration
 - (C) Genetic recombination
 - (D) Genetic drift

4. The first life form originated
(A) on land (B) in air (C) in water (D) all of these
5. The main weakness of Darwin's theory of Natural Selection was that it could not explain
(A) Basis of variation
(B) Reason for natural selection
(C) Struggle for existence
(D) All of these
6. Before Industrial revolution in England, the population of lighter variety of *Biston betularia* was high. During industrial revolution, due to excessive pollution, population of *darker variety* increased. Which type of selection is this?
(A) Stabilizing selection
(B) Normalizing selection
(C) Directional selection
(D) Disruptive selection
7. Refer to the diagram given below & identify the type of Natural selection



- (A) Stabilizing selection (B) Normalizing selection

(C) Directional selection (D) Disruptive selection

8. Match column I with column II

Column I

Column II

(A) Charles Darwin

(p) Saltation

(B) Lamarck

(q) Branching descent

(C) Thomas R. Malthus
characters

(r) Inheritance of acquired

(D) Hugo de Vries

(s) Theory of human
population growth.

(A) A-p, B-q, C-r, D-s

(B) A-q, B-r, C-s, D-p

(C) A-s, B-r, C-p, D-q

(D) A-r, B-s, C-p, D-q

9. Microbial experiments show that pre-existing advantageous mutations when selected will result in observation of new phenotypes. Over few generations, this would result in

(A) Natural selection

(B) Genetic drift

(C) Speciation

(D) Saltation

10. What is the theory of 'Panspermia'?

(A) Life came out of decaying and rotting matter.

(B) Life came on earth from outer space.

(C) Life comes only from pre-existing life.

(D) Life evolved only as a result of self-assembly.

11. The preserved fossil remains of *Archaeopteryx* show that
- (A) it was a flying reptile from the Permian period
 - (B) reptiles gave rise to birds during Jurassic period
 - (C) it was a flying reptile in the Triassic period
 - (D) reptiles gave rise to birds during Permian period.
12. Industrial melanism as observed in prepared moth proves that
- (A) the melanic form of the moth has no selective advantage over lighter form in industrial area
 - (B) the lighter-form moth has no selective advantage either in polluted industrial area or non-polluted area
 - (C) melanism is a pollution generated feature
 - (D) the true black melanic forms escaped unnoticed so they managed to survive resulting in more population of black moths.
13. The first ancestor of horse was:
- (A) Equus
 - (B) Eohippus
 - (C) Mesohippus
 - (D) Merychippus
14. The mixture of gases used by Miller in his experiments to prove the theory of chemical evolution was
- (A) CH₃, H₂, NH₃ and water vapour
 - (B) CH₄, H₂, NH₃ and water vapour
 - (C) CH₄, O₂, H₂ and water vapour
 - (D) CH₃, H₂, O₂ and water vapour

15. Choose the connotations of the theory of special creation.

(i) All living organisms that we see today were created as such.

(ii) First form of life arose slowly through evolutionary forces from non-living molecules.

(iii) Earth is about 4000 years old.

(iv) Diversity has always been the same since creation and will remain thus in future.

(A) (i) and (ii)

(B) (i), (iii) and (iv)

(C) (i), (ii) and (iii)

(D) (i), (ii), (iii) and (iv)

16. Find the correct match between the scientists and their contributions.

Sr.no	Scientist	Sr.no	Contribution
(A)	Oparin	(p)	Microspores
(B)	Haldane	(q)	Biogenesis
(C)	Sydney Fox	(r)	Coacervates
(D)	Louis Pasteur	(s)	Hot dilute soup

(A) A-r, B-p, C-s, D-q

(B) A-s, B-q, C-r, D-p

(C) A-r, B-s, C-p, D-q

(D) A-r, B-q, C-s, D-p

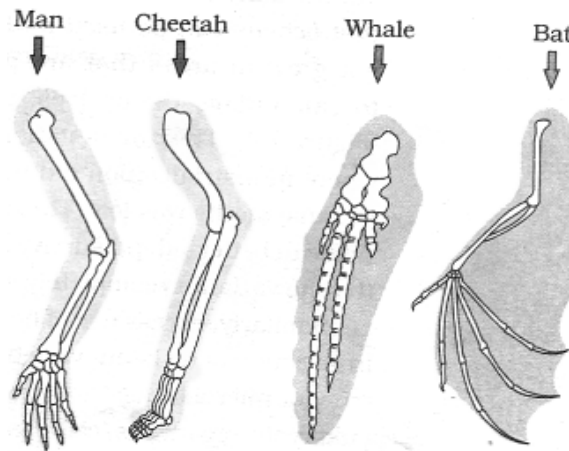
17. According to the theory of chemical evolution, the sequence of origin of life was:

- (A) organic molecules → inorganic molecules → colloidal aggregates → coacervates → cell
- (B) inorganic molecules → organic molecules → colloidal aggregates → coacervates → cell
- (C) inorganic molecules → organic molecules → colloidal aggregates → cell → coacervates
- (D) inorganic molecules → organic molecules → cell → colloidal aggregates → coacervates

18. Which of the following is/are a/an example(s) of analogous organs?

- (i) vertebrate hearts or brains
 - (ii) eyes of the octopus and those of mammals
 - (iii) thorns of *Bougainvillea* and tendrils of *Cucurbita*
 - (iv) sweet potato and potato
- (A) (ii) only (B) (ii) and (iv)
(C) (i) and (iii) (D) (i), (ii), (iii) and (iv)

19. Observe the following diagram. These structures are examples of



- (A) Analogous organs (B) Homologous organs
(C) Vestigial organs (D) Rudimentary organs

20. The character that proves that frogs have evolved from fishes is

- (A) their ability to swim in water
(B) tadpole larva in frogs
(C) similarity in the shape
(D) their feeding on aquatic plants.

21. The Jurassic period belongs to the _____ era.

- (A) cenozoic (B) mesozoic
(C) paleozoic (D) Proterozoic

22. Amphibians were dominant during _____ period.

- (A) carboniferous (B) silurian
(C) ordovician (D) Cambrian

23. Which one of the following statements is correct?
 (A) *Australopithecus* is the real ancestor of modern man.
 (B) Neanderthal man is the direct ancestor of *Homo sapiens*.
 (C) *Homo erectus* is the ancestor of man.
 (D) Cro-magnon man's fossil has been found in Ethiopia.

24. _____ were the first humans to use hides to protect their body and buried their dead.
 (A) *Homo habilis* (B) *Homo erectus*
 (C) Neanderthal man (D) *Homo sapiens*

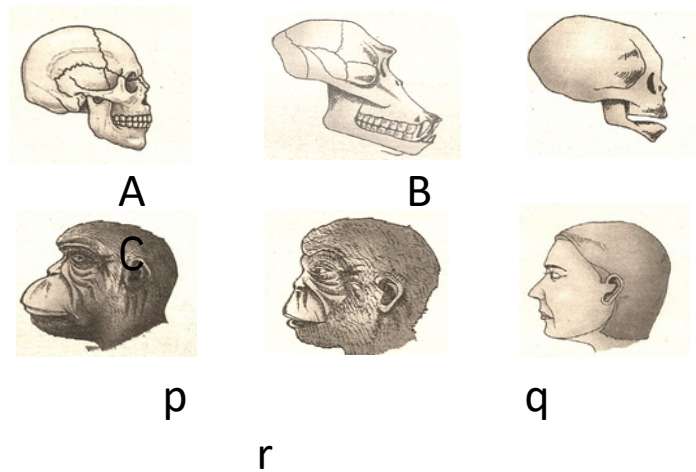
25. Choose the correct pair of hominids/humans and their corresponding years of appearance.

Sr.	Hominid/human	Sr.	Year or appearance
(A)	East African primates	(p)	1 billion years ago
(B)	<i>Homo erectus</i>	(q)	75000 years ago
(C)	Modern <i>Homo sapiens</i>	(r)	1.5 mya
(D)	Neanderthal man	(s)	3-4 mya

- (A) A-s, B-r, C-q, D-p

- (B) A-p, B-r, C-s, D-q (C)
 A-q, B-s, C-r, D-p (D) A-
 s, B-p, C-r, D-q

26. Observe the following figure and choose the correct statement.



- (A) A is the skull of q and more like that of r.
 (B) B and C skulls of different animals.
 (C) A and C are skulls of the same animal.
 (D) q is a baby gorilla while p is an adult chimpanzee.
27. Which of the following statement is false?
 (A) Unit of evolution is individual.
 (B) Organic evolution is change in properties of groups of organisms over the course of generation.
 (C) Populations undergo descent with modification.
 (D) Antibiotic resistance is an example of natural selection.

28. One of the oldest, best preserved and most complete hominid fossil commonly known as 'Luch' belongs to the genus
- (A) *Australopithecus* (B) *Oreopithecus*
(C) *Dryopithecus* (D) *Pithecanthropus*
29. Who finally proved that life can originate only from pre-existing life?
- (A) Louis Pasteur (B) Stanley Miller
(C) Harold C. Urey (D) Oparin-Haldane
30. Which of the following eras, in geological time scale, corresponds to the period when life had not originated upon the earth?
- (A) Azoic (B) Palaeozoic
(C) Mesozoic (D) Archaeozoic
31. Who among the following was a proponent of the hypothesis of acquired traits
- (A) August Weismann (B) Charles Darwin
(C) Jean Baptiste Lamarck (D) H.W. Bates
32. Which one represents a connecting link as an evidence from comparative anatomy in favour of organic evolution
- (A) Whale between fishes and mammals.
(B) *Archaeopteryx* between birds and mammals.
(C) Duckbill platypus between reptiles and mammals.
(D) Java ape-man between modern man and Peking man.

33. The water of primitive ocean during the time of “Origin of life”, has been called “hot dilute soup of organic substances” by
- (A) Haldane (B) Miller
(C) Oparin (D) Sydney Fox
34. The correct order of the geologic eras, from most ancient to most recent, is.....
- (A) Palaeozoic, Coenozoic, Mesozoic, Precambrian
(B) Precambrian, Mesozoic, Coenozoic, Palaeozoic
(C) Precambrian, Palaeozoic, Mesozoic, Coenozoic
(D) Palaeozoic, Mesozoic, Coenozoic, Precambrian
35. Which of the following is true for theory of special creation?
- (A) Life was created by wishes of a divine being or some supernatural power.
(B) Adam & Eve were first man and woman created by God.
(C) Theory of special creation is purely a religious concept, acceptable only on the basis of faith.
(D) All of these.
36. Abiogenesis first, but biogenesis ever since was said by
- (A) F. Redi (B) L. Pasteur
(C) A. Oparin (D) S. Miller

37. Most biologists think that RNA was the first genetic material because
- (A) Amino acids were produced in Stanley Miller's apparatus.
 - (B) DNA is the universal genetic material of eukaryotes.
 - (C) The existence of ribozyme suggests that early cell could have used RNA to catalyze chemical reactions and transfer information.
 - (D) RNA is complex than DNA.
38. Which one is not a vestigial organ?
- (A) Splint bone of horse
 - (B) Pelvic girdle of python
 - (C) Coccyx in man
 - (D) Flipper of seal
39. In which type of natural selection, individuals at both extremes of the distribution are rejected?
- (A) Normalizing selection
 - (B) Directional selection
 - (C) Diversifying selection
 - (D) Progressive selection
40. The sickle-cell (S) allele has a relatively high frequency in central Africa, even though individuals homozygous for this allele usually die before they reach reproductive age. Why has this allele persisted in the population in high frequencies when there appears to be such strong natural

selection against it? Which of the following are correct statements?

A. Because of its role in malaria resistance in heterozygotes

B. Because individuals homozygous for this characteristic are resistant to malaria

C. Because females heterozygous for this allele are more fertile than are those who lack it

D. Because females homozygous for this allele are more fertile than those who lack it

(A) A only

(B) B and C

(C) A and C

(D) B and D

41. When natural selection acts to eliminate rather than favour intermediate phenotypes, it is called as

(A) Balancing selection

(B) Stabilising selection

(C) Disruptive selection

(D) Non-directional selection

42. The phrase 'Survival of Fittest' was given by

(A) Charles Darwin

(B) Herbert Spencer

(C) Jean Baptiste Lamarck

(D) Hugo de Vries

43. The different varieties of pigeon like Pouter, Jacobin, Fantail are the examples of.
- (A) Natural selection
 - (B) Artificial selection
 - (C) Allopatric speciation
 - (D) Geographical isolation
44. A botanist is studying leaf size in a natural population of plants. The second season is particularly dry, and the following year, the average leaf size in the population is smaller than the year before. But, the amount of overall variation is the same and the population size has not changed. Also, he did experiments which show that small leaves are better adapted to dry conditions than the large leaves. Which of the following has occurred?
- (A) Genetic drift
 - (B) Directional selection
 - (C) Stabilizing selection
 - (D) Disruptive selection
45. Which of the following is not required for the size of a given trait to evolve by natural selection?
- (A) The size of the trait varies among individuals in population.
 - (B) There is a relationship between the size of the trait and the fitness (reproductive success) of the bearer of the trait.
 - (C) The size of the trait has genetic basis.
 - (D) Individuals with larger value of traits live longer.

ANSWERS

1. (B)	2. (D)	3. (D)	4. (C)	5. (A)
6. (C)	7. (D)	8. (B)	9. (C)	10. (B)
11. (B)	12. (D)	13. (B)	14. (B)	15. (B)
16. (C)	17. (B)	18. (B)	19. (B)	20. (B)
21. (B)	22. (A)	23. (C)	24. (C)	25. (A)
26. (A)	27. (A)	28. (A)	29. (A)	30. (A)
31. (C)	32. (C)	33. (A)	34. (C)	35. (D)
36. (C)	37. (C)	38. (D)	39. (A)	40. (C)
41. (C)	42. (B)	43. (B)	44. (B)	45. (D)

SOLUTIONS

4. The first cellular form of life were single-celled which originated in water environment only.

11. The earliest bird *Archaeopteryx* is considered to be a missing link between reptiles and birds, as it possesses both reptilian as well as avian characters.
12. The development of melanin pigment in moth occurred due to mutation. The light coloured form of peppered moth gave rise to the dark coloured form by mutation.
13. Eohippus was the first ancestor of horse.
20. The tadpole larva of frog bears gills, which proves that frogs have evolved from gilled ancestors.
21. Jurassic period, known as the age reptiles existed about 145 million years ago. It belongs to the Mesozoic era which is the era of medieval life (Age of reptiles and gymnosperms).

22. Carboniferous period of palaeozoic era is known as the age of amphibians. It existed about 350 million years ago in which reptiles and winged insects were originated and amphibians were dominant.
23. *Homo erectus* that appeared about 1.7 million years ago in middle Pleistocene is the ancestor of man.
28. In 1981, Donald Johanson, found a 3.2 million years old skeleton of a female human ancestor. He nicknamed it Lucy. Lucy's scientific name is *Australopithecus afarensis*.
29. Louis Pasteur proved that life can originate from pre-existing life only. He explained the phenomena of biogenesis.
30. Azoic era is the era of no life. It existed about 4600 million years ago when only solar system had originated.