CHAPTER 3

Evolution

Origin of Life & Theories of Evolution

1. From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask: *(2020)*
a. CH_3, H_2, NH_4 and water vapor at 800°C
b. CH_4, H_2, NH_3 and water vapor at 600°C
c. CH_3, H_2, NH_3 and water vapor at 600°C
d. CH_4, H_2, NH_3 and water vapor at 800°C

2. After about how many years of formation of earth, life appeared on this planet? *(2020-Covid)*
a. 50 million years b. 500 million years
c. 50 billion years d. 500 billion years

3. Which of the following is the correct sequence of events in the origin of life? *(2016 - II)*
I. Formation of protobionts
II. Synthesis of organic monomers
III. Synthesis of organic polymers
IV. Formation of DNA-based genetic systems
a. II, III, I, IV b. II, III, IV, I
c. I, II, III, IV d. I, III, II, IV

4. Following are the two statements regarding the origin of life: *(2016 - I)*
A. The earliest organisms that appeared on the earth were non-green and presumably anaerobes.
B. The first autotrophic organisms were the chemoautotroph's that never released oxygen.
Of the above statements which one of the following options is correct?
a. (A) is correct but (B) is false
b. (B) is correct but (A) is false
c. Both (A) and (B) are correct
d. Both (A) and (B) are false

Evidences of Evolution

5. Which of the following statements is not true? *(2022)*
a. Flippers of penguins and dolphins are a pair of homologous organs
b. Analogous structures are a result of convergent evolution
c. Sweet potato and potato is an example of analogy
d. Homology indicates common ancestry

6. Flippers of Penguins and Dolphins are examples of: *(2020)*
a. Convergent evolution b. Industrial melanism
c. Natural selection d. Adaptive radiation

7. Which of the following refer to correct example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action? *(2020)*
1. Darwin's Finches of Galapagos islands.
2. Herbicide resistant weeds.
3. Drug resistant eukaryotes.
4. Man-created breeds of domesticated animals like dogs.
a. (1) and (3) b. (2), (3) and (4)
c. Only (4) d. Only (2)

8. Embryological support for evolution was disapproved by: *(2020)*
a. Alfred Wallance b. Charles Darwin
c. Oparin d. Karl Ernst von Baer

9. Embryological support for evolution was proposed by: *(2020-Covid)*
a. Karl Ernst von Baer b. Charles Darwin
c. Alfred Wallace d. Ernst Heckel

10. The similarity of bone structure in the forelimbs of many vertebrates is an example of: *(2018)*
a. Homology b. Analogy
c. Convergent evolution d. Adaptive radiation

11. Among the following sets of examples for divergent evolution, select the incorrect option: *(2018)*
a. Forelimbs of man, bat and cheetah
b. Heart of bat, man and cheetah
c. Brain of bat, man and cheetah
d. Eye of octopus, bat and man

12. Analogous structures are a result of: *(2016 - I)*
a. Divergent evolution
b. Convergent evolution
c. Shared ancestry
d. Stabilising selection

13. Which of the following structures are homologues to the wing of a bird? *(2016 - I)*
a. Dorsal fin of a Shark d. Wing of a Moth
c. Hind limb of Rabbit d. Flipper of Whale

14. The wings of a bird and the wings of an insect are: *(2015 Re)*

a. Analogous structures and represent convergent evolution
b. Phylogenetic structures and represent divergent evolution
c. Homologous structures and represent convergent evolution
d. Homologous structures and represent divergent evolution

15. Industrial melanism is an example of: *(2015 Re)*

a. Natural selection b. Mutation
c. Neo Lamarckism d. Neo Darwinism

16. Forelimbs of cat, lizard used in walking; forelimbs of whale used in swimming and forelimbs of bats used in flying are an example of: *(2014)*

a. Convergent evolution b. Analogous organs
c. Adaptive radiation d. Homologous organs

17. Which one of the following are analogous structures? *(2014)*

a. Flippers of dolphin and legs of horse
b. Wings of bat and wings of pigeon
c. Gills of prawn and lungs of man
d. Thorns of *Bougainvillea* and tendrils of *Cucurbita*

18. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called: *(2013)*

a. Adaptive radiation b. Natural selection
c. Convergent evolution d. Non-random evolution

19. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of: *(2013)*

a. Analogous organs that have evolved due to divergent evolution
b. Homologous organs that have evolved due to convergent evolution
c. Homologous organs that have evolved due to divergent evolution
d. Analogous organs that have evolved due to convergent evolution

Adaptive Radiation

20. Match the following: *(2021)*

List-I		List-II	
(A)	Adaptive radiation	(i)	Selection of resistant varieties due to excessive use of herbicides and pesticides
(B)	Convergent evolution	(ii)	Bones of forelimbs in Man and Whale
(C)	Divergent evolution	(iii)	Wings of Butterfly and Bird
(D)	Evolution by anthropogenic action	(iv)	Darwin Finches

Choose the correct answer from the options given below.

a. A-iii B-ii C-i D-iv
b. A-ii B-i C-iv D-iii
c. A-i B-iv C-iii D-ii
d. A-iv B-iii C-ii D-i

21. The phenomenon of evolution of different species in a given geographical area starting from a point and spreading to other habitats is called- *(2020-Covid)*

a. Co-evolution b. Natural selection
c. Adaptive radiation d. Saltation

Biological Evolution And Mechanism of Evolution

22. Natural selection where more individuals acquired specific character value other than the mean character value, leads to:

a. Random change b. Stabilising change
c. Directional change d. Disruptive change

23. Variations caused by mutation, as proposed by Hugo de Vries are *(2019)*

a. Random and directional b. Random and directionless
c. Small and directional d. Small and directionless

24. In a species, the weight of newborn ranges from 2 to 5 kg. 97% of the newborn with an average weight between 3 to 3.3 kg survive whereas 99% of the infants born with weight from 2 to 2.5 kg or 4.5 to 5 kg die. Which type of selection process is taking place? *(2019)*

a. Directional Selection b. Stabilising Selection
c. Disruptive Selection d. Cyclical Selection

25. According to Hugo de Vries, the mechanism of evolution is: *(2018)*

a. Multiple step mutations b. Saltation
c. Phenotypic variations d. Minor mutations

26. Artificial selection to obtain cows yielding higher milk output represents: *(2017-Delhi)*

a. Stabilising selection as it stabilises this character in the population.
b. Directional as it pushes the mean of the character in one direction.
c. Disruptive as it splits the population into two one yielding higher output and the other lower output.
d. Stabilising followed by disruptive as it stabilises the population to produce higher yielding cows.

27. According to Darwin, the organic evolution is due to: *(2013)*

a. Reduced feeding efficiency in one species due to the presence of interfering species
b. Intraspecific competition
c. Interspecific competition
d. Competition within closely related species

Hardy-Weinberg Principle

28. The factor that leads to Founder effect in a population is: *(2021)*

a. Genetic recombination b. Mutation
c. Genetic drift d. Natural selection

29. A gene locus has two alleles A and a. If the frequency of dominant allele A is 0.4, then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population? *(2019)*

a. 0.36(AA); 0.48(Aa); 0.16(aa)
b. 0.16(AA); 0.24(Aa); 0.36(aa)
c. 0.16(AA); 0.48(Aa); 0.36(aa)
d. 0.16(AA); 0.36(Aa); 0.48(aa)

30. In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by: *(2016 - II)*

a. pq
b. q^2
c. p^2
d. 2pq

31. Genetic drift operates in: *(2016 - II)*

a. Non-reproductive population
b. Slow reproductive population
c. Small isolated population
d. Large isolated population

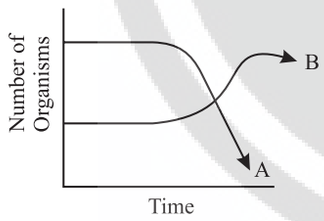
32. Which is the most common mechanism of genetic variation in the population of a sexually reproducing organism? *(2015)*

a. Genetic drift
b. Recombination
c. Transduction
d. Chromosomal aberrations

33. A population will not exist in Hardy-Weinberg equilibrium if: *(2015)*

a. There is no migration
b. The population is large
c. Individuals mate selectively
d. There are no mutations

34. The following graph depicts changes in two populations (A and B) of herbivores in a grassy field. A possible reason for these changes is that: *(2015)*



a. Population A produced more offspring than population B
b. Population A consumed the members of population B
c. Both plant populations in this habitat decreased
d. Population B competed more successfully for food than population A

35. In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is: *(2014)*

a. 0.7
b. 0.4
c. 0.5
d. 0.6

36. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as: *(2013)*

a. Genetic load
b. Genetic flow
c. Genetic drift
d. Random mating

37. The tendency of population to remain in genetic equilibrium may be disturbed by: *(2013)*

a. Lack of random mating
b. Random mating
c. Lack of migration
d. Lack of mutations

Human Evolution

38. A Hominid fossil discovered in Java in 1891, now extinct, having cranial capacity of about 900 cc was: *(2020-Covid)*

a. Neanderthal man
b. *Homo sapiens*
c. *Australopithecus*
d. *Homo erectus*

39. Match the hominids with their correct brain size :

A. *Homo habilis*	i. 900 cc
B. *Homo neanderthalensis*	ii. 1350 cc
C. *Homo erectus*	iii. 650-800 cc
D. *Homo sapiens*	iv. 1400 cc

Select the correct option. *(2019)*

	(A)	(B)	(C)	(D)
a.	(iii)	(i)	(iv)	(ii)
b.	(iii)	(ii)	(i)	(iv)
c.	(iii)	(iv)	(i)	(ii)
d.	(iv)	(iii)	(i)	(ii)

40. The chronological order of human evolution from early to the recent is: *(2016 - II)*

a. *Ramapithecus-Homo habilis-Australopithecus -Homo erectus*
b. *Australopithecus-Homo habilis-Ramapithecus -Homo erectus*
c. *Australopithecus-Ramapithecus-Homo habilis -Homo erectus*
d. *Ramapithecus-Australopithecus-Homo habilis -Homo erectus*

41. Which of the following had the smallest brain capacity? *(2015 Mains)*

a. *Homo neanderthalensis*
b. *Homo habilis*
c. *Homo erectus*
d. *Homo sapiens*

Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
d	b	a	c	a	a	b	d	d	a	d	b	d	a	a	d	b,c
18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
c	d	d	c	c	b	b	b	b	c	c	c	d	c	b	c	d
35	36	37	38	39	40	41										
d	c	a	d	c	d	b										