

CBSE Class 12 Biology
NCERT Exemplar Solutions
CHAPTER 7
EVOLUTION

Multiple Choice Questions (MCQs)

1. Which of the following is used as an atmospheric pollution indicator?

- (a) **Lepidoptera**
- (b) **Lichens**
- (c) **Lycopersicon**
- (d) **Lycopodium**

Ans. (b) Lichens

Explanation: Lichens do not possess roots and hence air is their primary source for most elements. They will not grow in the areas that are polluted. So, lichen is used as a reliable indicator of atmospheric pollution.

2. The theory of spontaneous generation stated that:

- (a) **life arose from living forms only**
- (b) **life can arise from both living and non-living**
- (c) **life can arise from non-living things only.**
- (d) **life arises spontaneously, neither from living nor from the non-living.**

Ans. (c) life can arise from non-living things only.

Explanation: This theory was based on the assumption that life could have formed from non-animate matters. Option 'c' is correct.

3. Animal husbandry and plant breeding programmes are the examples of:

- (a) reverse evolution
- (b) artificial selection
- (c) mutation
- (d) natural selection

Ans. (b) artificial selection

Explanation: Animal husbandry and plant breeding programmes need human intervention and desirable characters are introduced in plants and animals through manipulation. Hence, these are examples of artificial selection.

4. Palaentological evidences for evolution refer to the:

- (a) development of embryo
- (b) homologous organs
- (c) fossils
- (d) analogous organs.

Ans. (c) fossils

Explanation: In fact, study of fossils is called palaentology. The term 'palaeo' is related to old and historic items.

5. The bones of forelimbs of whale, bat, cheetah and man are similar in structure, because:

- (a) one organism has given rise to another
- (b) they share a common ancestor
- (c) they perform the same function



(d) they have biochemical similarities

Ans. (b) they share a common ancestor

Explanation: Similarity in structural design indicates towards a common ancestry.

6. Analogous organs arise due to:

(a) divergent evolution

(b) artificial selection

(c) genetic drift

(d) convergent evolution

Ans. (d) convergent evolution

Explanation: Analogous organs have evolved from different ancestors but all of them show similar function. Hence, they show convergent evolution.

7. $(p + q)^2 = p^2 + 2pq + q^2 = 1$ represents an equation used in:

(a) population genetics

(b) mendelian genetics

(c) biometrics

(d) molecular genetics Ans. (a)

population genetics **Explanation:** (a)

population genetics

8. Appearance of antibiotic-resistant bacteria is an example of:

(a) adaptive radiation



- (b) transduction**
- (c) pre-existing variation in the population**
- (d) divergent evolution**

Ans. (c) pre-existing variation in the population

Explanation: Adaptive radiation is related to evolution of different designs for a single organ according to varied needs of different groups. Transduction is related to transfer of viral or bacterial genetic material. Divergent evolution is related to homologous organs. Hence, option 'c' is correct.

9. Evolution of life shows that life forms had a trend of moving from:

- (a) land to water**
- (b) dryland to wet land**
- (c) fresh water to sea water**
- (d) water to land**

Ans. (d) water to land

Explanation: Most of the primitive organisms live in water, while most of the complex organisms live on land. This shows that evolution of life progressed from water to land.

10. Viviparity is considered to be more evolved because:

- (a) the young ones are left on their own**
- (b) the young ones are protected by a thick shell**
- (c) the young ones are protected inside the mother's body and are looked after they are born leading to more chances of survival**
- (d) the embryo takes a long time to develop**



Ans. (c) the young ones are protected inside the mother's body and are looked after they are born leading to more chances of survival

Explanation: (c) the young ones are protected inside the mother's body and are looked after they are born leading to more chances of survival

11. Fossils are generally found in:

- (a) Sedimentary rocks
- (b) Igneous rocks
- (c) Metamorphic rocks
- (d) Any type of rock

Ans. (a) Sedimentary rocks

Explanation: Igneous rocks are formed from lava and hence no fossil can be found in them. Metamorphic rocks can be made from igneous or sedimentary rocks. Hence, 'a' is the correct answer.

12. For the MN-blood group system, the frequencies of M and N alleles are 0.7 and 0.3, respectively. The expected frequency of MN-blood group bearing organisms is likely to be

- (a) 42%
- (b) 49%
- (c) 9%
- (d) 58%

Ans. (a) 42%

Explanation: This can be solved by using the binomial expression:

$$(a + b)^2 = a^2 + 2ab + b^2$$



Here; $M = a$ and $N = b$

$$\begin{aligned} \text{So, } (M + N)^2 &= M^2 + 2MN + N^2 \\ &= 0.7^2 + 2 \times 0.7 \times 0.3 + 0.3^2 \\ &= 0.49 + 0.42 + 0.09 \end{aligned}$$

In this equation; value of $2MN = 0.42 = 42\%$

13. Which type of selection is industrial melanism observed in moth, Biston bitularia:

- (a) Stabilising
- (b) Directional
- (c) Disruptive
- (d) Artificial

Ans. (b) Directional

Explanation: Industrial melanism is not a mean character but is acquired by most of the individuals. Hence, it is an example of directional change.

14. The most accepted line of descent in human evolution is:

- (a) Australopithecus → Ramapithecus → Homo sapiens → homo habilis
- (b) Homo erectus → Homo habilis → Homo sapiens
- (c) Ramapithecus → Homo habilis → Homo erectus → Homo sapiens
- (d) Australopithecus → Ramapithecus → Homo erectus → Homo habilis → Homo sapiens.

Ans. (c) Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

Explanations: (c) Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

15. Which of the following is an example for link species?



- (a) Lobe fish
- (b) Dodo bird
- (c) Sea weed
- (d) Chimpanzee

Ans. (a) Lobe fish

Explanation: Lobe fish shows characters from cartilaginous fishes and from amphibia. They belong to bony fishes. Since, they show characters from two other groups of animals, they are considered as link species.

16. Match the scientists listed under column 'A' with ideas listed under column 'B'.

	Column A	Column B
(i)	Darwin	M. abiogenesis
(ii)	Oparin	N. use and disuse of organs
(iii)	Lamarck	O. continental drift theory
(iv)	Wagner	P. evolution by natural selection

- (a) (i) M; (ii) P; (iii) N; (iv) O
- (b) (i) P; (ii) M; (iii) N; (iv) O
- (c) (i) N; (ii) P; (iii) O; (iv) M
- (d) (i) p; (ii) O; (iii) N; (iv) M

Ans. (b) (i) P; (ii) M; (iii) N; (iv) O

Explanation: (b) (i) P; (ii) M; (iii) N; (iv) O

17. In 1953 S. L. Miller created primitive earth conditions in the laboratory and gave experimental evidence for origin of first form of life from preexisting non-living organic molecules. The primitive earth conditions created include:

- (a) low temperature, volcanic storms, atmosphere rich in oxygen
- (b) low temperature, volcanic storms, reducing atmosphere
- (c) high temperature, volcanic storms, non-reducing atmosphere
- (d) high temperature, volcanic storms, reducing atmosphere containing CH_4 , NH_3 etc.

Ans. (d) high temperature, volcanic storms, reducing atmosphere containing CH_4 , NH_3 etc.

18. Variations during mutations of meiotic recombinations are:

- (a) random and directionless
- (b) random and directional
- (c) random and small
- (d) random, small and directional **Ans.**

(a) random and directionless **Explanation:**

- (a) random and directionless