Q.1. Select correct statement regarding origin of life

A. Oparin and Haldane proposed that life originated in the primitive ocean.

B. Miller's experiment proved that simple inorganic molecules could form amino acids.

C. Miller's experiment provided direct evidence for spontaneous generation.

D. Louis Pasteur experiment finally discarded the concept of spontaneous generation

E. Early atmosphere was rich in oxygen.

(1) A, B, D and E only

(2) A, C and E only

(3) A, B and D only

(4) A and E only

Q.2. Choose incorrect statement regarding evidence of evolution

A. Homologous organs indicate convergent evolution.

B. Analogous organs show divergent evolution.

C. Wings of bats and birds are homologous structures.

D. Flippers of penguins and dolphins are examples of homology.

E. Fossils provide evidence for transitional forms.

(1) A, B, D and E only

(2) A, C and E only

(3) A, B and D only

(4) A and E only

Q.3. Select correct statement regarding Darwin's theory

A. Overproduction of offspring leads to struggle for existence.

B. Natural selection favors survival of fittest variants.

C. Variations are inherited from one generation to another.

D. Darwin accepted mutation as a major cause of variation.

E. Adaptive features help survival in changing environment.

(1) A, B, C and E only

(2) A, C and E only

(3) A, B and D only

(4) A and D only

Q.4. Choose incorrect statement with respect to Hardy–Weinberg Principle

A. Allele frequency in a population remains constant if no evolutionary forces act.

B. Disturbance in equilibrium indicates evolution.

C. Genetic drift, migration, mutation can not affect allele frequency.

D. Polpulation remain in equilibrium if natural selction oprates in population

E. Hardy–Weinberg principle is represented by $(p^2 + 2pq + q^2 = 1)$.

(1) A, B, D and E only

(2) A, C and E only

(3) A, B and D only

(4) C and D only

Q.5. Select correct statement regarding industrial melanism

A. It is an example of natural selection.

B. Dark-colored moths had advantage in polluted areas.

C. Light-colored moths survived better before industrialization.

D. Industrial melanism proves Lamarck's theory.

E. It shows adaptive value of heritable variations.

(1) A, B, C and E only

(2) A, C and E only

(3) A, B and D only

(4) C and D only

Q.6. Select correct statement regarding adaptive radiation

A. Darwin's finches are examples of adaptive radiation.

B. Australian marsupials diversified into many ecological niches.

C. Adaptive radiation is convergent evolution.

D. Wings of butterfly and bat represent adaptive radiation.

E. Placental mammals in Australia diversified into many ecological niches.

(1) A, B, D and E only

(2) A, C and E only

(3) A, B and E only

(4) C and D only

Q.7. Select correct statement regarding human evolution

A. Dryopithecus and Ramapithecus were early human ancestors.

B. Australopithecus lived in East Africa and walked upright.

C. *Homo habilis* had a large brain size around 900cc. D. *Homo erectus* probably eat meat.

E. *Homo erectus* buried their dead.

(1) A, B and D only

(2) A, C and E only

(3) A, B and E only

(4) C and D only

Q.8. Select correct statement regarding types of natural selection

A. Stabilizing selection favors average traits.

B. Directional selection favors one extreme phenotype.

C. Disruptive selection favors both extremes.

D. Directional selection led to antibiotic resistance in bacteria.

E. Stabilizing selection produces entirely new phenotypes.

(1) A, B, C and D only

(2) A, C and E only

(3) A, B and E only

(4) C and D only

Q.9. Select incorrect statement from the following

A. About 2000 million years ago the first cellular forms of life appeared on earth.

B. Coelacanth (fish) caught in South America in year 1938 evolved into the first amphibians.

C. Jawless fishes probably evolve around 350 mya

D. About 40 mya, the dinosaurs suddenly disappreaed from the earth

E. The first mammals evolved were like shrew

(1) A, B, D and E only

(2) A, C and E only

(3) A, B and E only

(4) B and D only

Q.10. Read the following statements regarding evolution by anthropogenic action and identify the correct ones:

A. Overuse of herbicides, pesticides and antibiotics has led to selection of resistant varieties of plants, insects and microbes in very short time scales.

B. Resistant organisms/cells can appear within months or years, rather than centuries.

C. Evolution in such cases is a directed and deterministic process controlled by humans.

D. Evolution is a stochastic process, based on chance events and chance mutations in organisms.

E. Anthropogenic action provides selection pressure that favours resistant variants already present in populations.

(1) A, B and C only

(2) B, C and D only

(3) A, B, D and E only

(4) A, C and E only

Q.11. Select correct statements from the following regarding case study of Peppered Moth. In England, moth population changed during industrialization.

A. Before industrialization, white moths were abundant.

B. After industrialization, black moths were favored.

C. Natural selection led to change in population structure.

D. This was due to mutation producing dark-colored moths.

E. Example of directional selection.

(1) A, B and D only

(2) A, B, C and E only

(3) A, B and E only

(3) C and D only

Q.12. Consider the following statements related to Hugo de Vries and his concept of mutation:

A. Hugo de Vries worked on *Oenothera lamarckiana* (evening primrose).

B. He proposed that mutations are sudden, large, and heritable variations.

C. According to de Vries, mutations are the raw material for evolution.

D. De Vries suggested that mutations appear gradually and accumulate slowly over generations.

E. The Mutation Theory was later found to be partly correct and partly modified by modern genetics.

(1) A, B and C only
(2) A, B, D and E only
(3) A, C and D only
(4) A, B, C and E only

Q.13. Select correct statements from the following regarding antibiotic resistance

A Bacteria developed resistance due to misuse of antibiotics.

B. Resistant bacteria survived and reproduced (selection).

C. Mutations provided genetic basis for resistance.

D. Example of Darwinian selection in action.

E. Resistance genes evolved because bacteria "wanted" to survive.

(1) A, B and D only
(2) A, B, C and D only
(3) A, B and E only
(4) C and D only

Q.14. Read the following statements about Darwin's theory of natural selection and identify the correct ones:

A. Darwin was influenced by Thomas Malthus, who highlighted that populations populations tend to grow geometrically/exponentially if everyone reproduces maximally, while resources (food) increase arithmetically causes resource limitation and leads to struggle for existence**.**

B. Populations are generally stable in size, except for seasonal fluctuations, because of competition for limited resources.

C. No two individuals are exactly alike; members of a population show variations, many of which are heritable.

D. According to Darwin, variations that confer better resource utilisation provide survival advantage, and such individuals leave more progeny.

E. Natural selection is based on the idea that population characteristics remain unchanged over time despite competition.

(1) A, B, C and D only
(2) A, B and E only
(3) B, C, D and E only
(4) A, C and E only

Q.15. Choose correct one with respect to Darwin studied of finches on Galpagos islands.

A. All finches evolved from a common ancestor.

B. Beak variations allowed use of different food sources.

C. This is adaptive radiation.

D. Example of convergent evolution.

E. Natural selection shaped finch diversity.

(1) A, B, C and E only
(2) A, B and E only
(3) B, C, D and E only
(4) A, C and E only

Q.16. Select correct statements regarding genetic drift

A. Genetic drift has stronger effect in small isolated populations.

B. Founder effect occurs when few individuals colonize a new habitat.

C. Bottleneck effect occurs after drastic population reduction.

D. Drift always leads to adaptation.

E. Drift may lead to addition of alleles.

(1) A, B, C and E only
(2) A, B and E only
(3) B, C, D and E only
(4) A, B and C only

Q.17. Select correct statements regarding human evolution timeline

A. *Australopithecus* was first ape-man walking upright.

B. *Homo habilis* had 650–800 cc brain, made tools.

C. *Homo erectus* had larger brain than homo habilis and probably ate meat.

D. Neanderthals lived in Europe and made cave paintings.

E. Modern *Homo sapiens* arose in Africa about 1.6 mya.

(1) A, B, C and D only

(2) A, B and C only

(3) B, C, D and E only

(4) A, C and E only

Q.18. Choose correct one with respect to case study of Hardy–Weinberg in action

In *a population, frequency of allele 'a' = 0.3, allele 'A' = 0.7*

A. Frequency of AA = 0.49.

B. Frequency of Aa = 0.42.

C. Frequency of aa = 0.09.

D. Heterozygous individual in the population of 100 individual is 9.

E. Homozygous individual in the population of 100 individual is 49.

(1) A, B, C and E only

(2) A, B and E only

(3) B, C, D and E only

(4) A, B and C only

Q.19. Read the following statements (A–E) and choose the correct statements only

A. According to the theory of special creation, all living organisms were created as such and have remained unchanged since creation.

B. The theory of special creation assumes that Earth is around 4000 years old.

C. Darwin proposed that existing life forms share similarities with those that lived millions of years ago and that life has evolved gradually over time.

D. According to Darwin, natural selection favors individuals that are physically stronger than others.

E. Alfred Wallace, working in the Malay Archipelago, independently reached conclusions similar to those of Darwin.

(1) A, B and C only (2) A, B, C and E only

(3) B, C and D only (4) A and B only

Q.20. Read the following statements (A–E) and choose the correct statements only

A. The Big Bang theory explains the origin of the universe through a massive explosion.

B. Hydrogen and Helium were the first elements to form after the Big Bang.

C. Early Earth had a thick oxygen-rich atmosphere.

D. Formation of oceans occurred after the earth cooled and rainfall filled depressions.

E. Life appeared on Earth about 500 million years after its formation.

(1) A, B and D only

(2) A, B, D and E only

(3) A, C and E only

(4) All statements are correct

ANWERS – KEY

Q	1	2	3	4	5	6	7	8	9	10
Ans.	(3)	(3)	(1)	(4)	(1)	(3)	(1)	(1)	(4)	(3)
Q	11	12	13	14	15	16	17	18	19	20
Ans.	(2)	(4)	(2)	(1)	(1)	(4)	(2)	(4)	(2)	(2)