ULTIMATE KCET CRASH COURSE 2026

ZOOLOGY

DPP: 1

Evolution

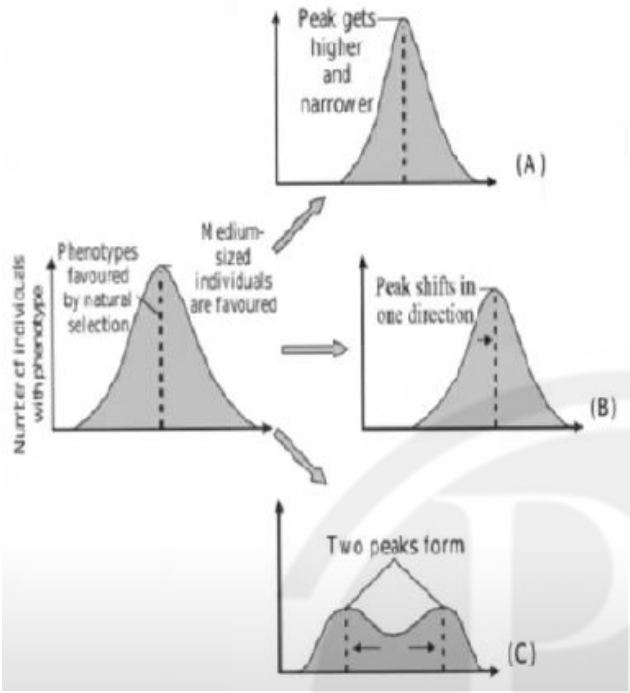
Q1 Adaptive radiation refers to
(A) evolution of different species from a common ancestor
(B) migration of members of a species to different geographical areas
(C) power of adaptation in an individual to a variety of environments
(D) adaptations due to geographical isolation.

Q2 Given below are two statements:
Statement I: The process of evolution of different species in a given geographical area starting from a point and literally radiating to other areas of geography (habitats) is called adaptive radiation.
Statement II: Marsupials of Australia are examples of adaptive radiation.
In the light of the above statements, choose the most appropriate answer from the options given below:
(A) Statement I and Statement II both are correct.
(B) Statement I is correct but Statement II is incorrect.
(C) Statement I is incorrect but Statement II is correct.
(D) Statement I and Statement II both are incorrect.

Q3 Given below are two statements: one is labelled as Assertion A and the other is labelled as
Reason R.
Assertion (A): Sweet potato and potato are examples of homologous structures.
Reason (R): Both sweet potato and potato perform the function of storage of food.
In the light of the above statements, choose the **correct** answer from the options given below.
(A) A is true but R is false.
(B) A is false but R is true.
(C) Both A and R are true and R is the correct explanation of A.
(D) Both A and R are true but R is not the correct explanation of A.

Q4 A gene locus has two alleles A, 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?
(A) 0.16 (AA); 0.36 (Aa); 0.48 (aa)
(B) 0.36 (AA); 0.48 (Aa); 0.16 (aa)
(C) 0.16 (AA); 0.24 (Aa); 0.36 (aa)
(D) 0.16 (AA); 0.48 (Aa); 0.36 (aa)

Q5 Following is the diagrammatic representation of the operation of natural selection of different traits. Which of the following options correctly identifies all the three graphs A, B and C



(A) A - Directional , B - Stabilising , C - Disruptive
(B) A - Stabilising , B - Directional , C - Disruptive
(C) A - Disrutive , B - Stabilising , C - Directional
(D) A - Directional , B - Disruptive , C - Stabilising

Q6 What does the term 'fitness' refer to in Darwin's theory?
(A) Physical strength.
(B) Ability to survive harsh climates.
(C) Reproductive success of individuals.
(D) Adaptation to specific habitats.

Q7 Which of the following defines Hardy–Weinberg's law?
(A) $p^2 + 2pq + q^2 = 0$
(B) $q^2 + p^2 + 2pq = 0$
(C) $p^2 + 2pq + q^2 = 1$
(D) $p^2 + 3pq + q^2 = 1$

Q8 Convergent evolution is illustrated by
(A) rat and dog
(B) bacterium and protozoan
(C) starfish and cuttle fish
(D) dogfish and whale.

Q9 Stanley Miller had put the Oparin-Haldane theory to test in 1953 by creating in the laboratory, the probable conditions of the primitive earth. In the experiment, simple amino acids were synthesized from which of the following mixtures as observed after 18 days?
(A) H_2, O_2, N and H_2O
(B) CH_4, CN, H_2 and O_2
(C) H_2, NH_3, CH_4 and water vapours
(D) NH_3, CH_4 and O_2

Q10 Darwin's finches discovered from the Galapagos Islands serve as a good example of
(A) Mimicry
(B) Camouflage
(C) Seasonal migration
(D) Biogeographical evidence of evolution

Q11 The chronological order of human evolution from early to the recent stages is
(A) Ramapithecus Australopithecus Homo habilis Homo erectus
(B) Australopithecus Ramapithecus Homo habilis Homo erectus
(C) Pithecanthropus pekinensis Homo habilis Homo erectus
(D) Australopithecus Ramapithecus Pithecanthropus pekinensis Homo erectus

Q12 Theory of Natural Selection dwells on
(A) role of environment in evolution
(B) natural selection acting on favourable variations
(C) changes in gene complex resulting in heritable variations
(D) none of these.

Q13 Thorns of Bougainvillea and tendrils of Cucurbita are examples for _____.
(A) Convergent evolution
(B) Divergent evolution
(C) Adaptive radiation
(D) Co-evolution

Q14 Which of the following amino acids was not found to be synthesised in Miller's experiment?
(A) Alanine (B) Glycine
(C) Aspartic acid (D) Glutamic acid

Q15 Following are the two statements regarding the origin of life.
(A) The earliest organisms that appeared on the earth were non-green and presumably anaerobes.
(B) The first autotrophic organisms were the chemoautotrophs that never released oxygen.
Of the above statements which one of the following options is correct?
(A) Both (A) and (B) are correct.
(B) Both (A) and (B) are false.
(C) (A) is correct but (B) is false.
(D) (B) is correct but (A) is false.

Q16 Which one of the following describes correctly the homologous structures ?
(A) Organs with anatomical similarities, but performing different functions
(B) Organs with anatomical dissimilarities, but performing same function
(C) Organs that have no function now, but had an important function in ancestor
(D) Organs appearing only in embryonic stage and disappearing later in the adult

Q17 Select the **incorrect** option.
(A) Homo sapiens arose in America.
(B) Ramapithecus was more man-like.
(C) Homo erectus had a cranial capacity of 900 cc.
(D) Agriculture came around 10,000 years ago.

Q18 The four elements that make up 99% of all elements found in a living system are:
(A) H, O, C, N (B) C, H, O, S
(C) C, H, O, P (D) C, N, O, P

Q19 Who proposed that the first form of life came from pre-existing non-living organic molecules?
(A) Oparin & Haldane
(B) Stanley Miller & Harold Urey
(C) Lamarck & Darwin
(D) Hugo de Vries & Darwin

Q20 Which of the following structures is homologus to the wing of a bird?
(A) Hindlimb of rabbit
(B) Flipper of whale
(C) Dorsal fin of a shark
(D) Wing of a moth

Q21 Mark the proper order according to Big Bang theory:

1. Huge explosion.
2. Water vapour, methane, carbondioxide and ammonia released from molten mass covered the surface.
3. Hydrogen and Helium formed.
4. The ozone layer was formed.
5. The gases condensed under gravitation and formed the galaxies of the present day universe.

(A) I II III IV V
(B) I III IV V II
(C) I III V II IV
(D) I II III V IV

Q22 The most apparent change during the evolutionary history of Homo sapiens is raced in
(A) Loss of body hair
(B) Walking upright
(C) Shortening of the jaws
(D) Remarkable increase in the brain size

Q23 Peripatus is a connecting link between
(A) Mollusca and Echinodermata
(B) Annelida and Arthropoda
(C) Coelenterata and Porifera
(D) Ctenophora and Platyhelminthes

Q24 The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called
(A) nonrandom evolution
(B) adaptive radiation
(C) natural selection
(D) convergent evolution.

Q25 Which one of the following experiments suggests that simplest living organisms could not have originated spontaneously from non-living matter?
(A) Larvae could appear in decaying organic matter.
(B) Microbes did not appear in stored meat.
(C) Microbes appeared from unsterilised organic matter.
(D) Meat was not spoiled, when heated and kept sealed in a vessel.

Q26 An isolated population of humans with equal number of blue-eyed and brown-eyed individuals was decimated by an earthquake. Only a few brown-eyed remained to form the next generation. This kind of change in the gene pool is called
(A) Hardy-Weinberg equilibrium
(B) Blocked gene flow
(C) Bottle neck effect
(D) Founder effect

Q27 According to Hugo de Vries, the mechanism of evolution is
(A) multiple step mutations
(B) saltation
(C) phenotypic variations
(D) minor mutations.

Q28 Assertion : Genetic drift refers to changes in allele frequency.
Reason : Heritable variations enable survival of the fittest.
(A) Assertion and reason both are correct statements and reason is correct explanation for assertion.
(B) Assertion and reason both are correct statements but reason is not correct explanation for assertion.
(C) Assertion is correct statement but reason is wrong statement.
(D) Assertion is wrong statement but reason is correct statement

Q29 According to fossils discovered up to present time origin and evolution of man started from
(A) France (B) Java
(C) Africa (D) China

Q30 Man differs from apes in having
(A) legs longer than arms
(B) protruding jaws
(C) grasping hands
(D) poorly developed forehead

Answer Key

Q1	A
Q2	A
Q3	B
Q4	D
Q5	B
Q6	C
Q7	C
Q8	D
Q9	C
Q10	D
Q11	A
Q12	B
Q13	B
Q14	D
Q15	A
Q16	A
Q17	A
Q18	A
Q19	A
Q20	B
Q21	C
Q22	D
Q23	B
Q24	D
Q25	D
Q26	C
Q27	B
Q28	B
Q29	C
Q30	A

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Text Solution:

evolution of different species from a common ancestor

Video Solution:

Q2 Text Solution:

The process of evolution of different species in a given geographical area starting from a point and literally radiating to other areas of geography (habitats) is called adaptive radiation. Marsupials of Australia are examples of adaptive radiation.

Video Solution:

Q3 Text Solution:

Sweet potato (root) and potato (stem) are analogous structures, as they perform the same function (storage) but arise from different origins.

Video Solution:

Q4 Text Solution:

Frequency of dominant allele (A) = 0.4

Applying Hardy-Weinberg equilibrium; p + q = 1 q = 1 – 0.4 = 0.6 ; p2 + q2 + 2pq = 1

Frequency of homozygous dominant genotype

(p2\AA) = (0.4)2 = 0.16

Frequency of heterozygous genotype

(2pq\Aa) = 2 . 0.4 . 0.6 = 0.48

Frequency of homozygous recessive genotype

(q2 \ aa) = (0.6)2 = 0.36

Video Solution:

Q5 Text Solution:

The capacity and traits of a given species are taken into consideration throughout the process of natural selection in order to determine whether they are capable of naturally evolving into a superior species.

Natural selection can lead to :-

1). Directional selection

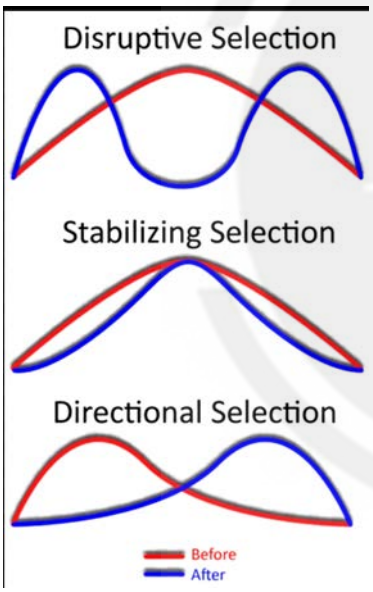
- Natural selection of this kind favours one of the extremes of the ongoing variety present in the community. Any species may be used, depending on what the natural world favours.
- In this kind of selection, the community's intermediate species are not at all chosen. As time passes, one of the extreme species will multiply, and the species that weren't chosen will gradually approach extinction.

2). Stabilizing selection

- In this sort of natural selection, nature ignores and does not choose the extreme species, favouring the ongoing modifications of the intermediate species. The number of intermediate species will rise while the number of extreme species will gradually disappear over time.

3). Disruptive Selection

- The continuous variable species that are at the extremity of the community will be chosen in this type of natural selection. Another thing to keep in mind is that in this kind of selection, the intermediate species are overlooked while both extreme species are chosen. With time, the population of intermediate species will decline.



Video Solution:

Q6 Text Solution:

In Darwinian evolution, "fitness" refers to the ability to survive and reproduce, ensuring the passage of genes to the next generation.

Video Solution:

Q7 Text Solution:

$p^2 + 2pq + q^2 = 1$

Video Solution:

Q8 Text Solution:

Convergent evolution is the formation of similar traits by unrelated groups of organisms. Dogfish and whale are the interesting examples of convergent evolution in animals as both of them have more or less similar body organization.

Video Solution:

Q9 Text Solution:

Stanley Miller used the chemicals like ammonia, methane, hydrogen gases and water vapour which war also present in the primitive earth.

Video Solution:

Q10 Text Solution:

Darwin's finches discovered from the Galapagos Islands serve as a good example of biogeographical evidence of evolution.

Video Solution:

Q11 Video Solution:

Q12 Text Solution:

The theory of natural selection is based on the following factors :

(i) Rapid multiplication and limited food and space which leads to struggle for existence.

(ii) Struggle for existence and variations which leads to natural selection or survival of the fittest.

(iii) Natural selection and inheritance of useful variation over many generation which leads to formation of new species.

Darwin in his "Natural Selection Theory" did not believe in the role of discontinuous variation in natural selection.

Darwin always believed in the universal occurrence of variation. In his opinion, variation is continuous in nature. Darwin did not understand the cause of variation and assumed it was one of the innate properties of living things. Now it is known that variation is due to mutation and thus it may be discontinuous.

Video Solution:

Q13 Text Solution:

Thorns of bougenvilla and tendrils of cucurbita are example of homologous organs which occurs due to divergent evolution

Video Solution:

Q14 **Text Solution:**
Glutamic acid

Video Solution:

Q15 **Text Solution:**
Both (A) and (B) are correct.

Video Solution:

Q16 **Text Solution:**
Organs with anatomical similarities, but performing different functions

Video Solution:

Q17 **Text Solution:**
Homo sapiens arose in Africa and moved across continents and developed into distinct races.

Video Solution:

Q18 **Text Solution:**
H, O, C, N

Video Solution:

Q19 **Text Solution:**
Oparin of Russia and Haldane of England proposed that the first form of life could have come from pre-existing non-living organic molecules.

Video Solution:

Q20 **Text Solution:**
Flipper of whale

Video Solution:

Q21 **Text Solution:**
I III V II IV

Video Solution:

Q22 **Text Solution:**

Remarkable increase in the brain size

Video Solution:

Q23 **Text Solution:**

Peripatus is a genus of Onychophora (Velvet worms). It is said to be a living fossil because it has been unchanged for approximately 570 million years. *Peripatus* is a nocturnal carnivore. *Peripatus* is a connecting link between Annelida and Arthropoda. It feeds by trapping its prey (mostly small insects) in a white, sticky fluid it ejects from two antennae near its head. The fluid hardens on contact with the air and then the prey becomes immoblized.

Video Solution:

Q24 **Text Solution:**

Convergent evolution is the development of superficially similar structures in unrelated organisms, usually because the organisms live in the same kind of environment. Examples are the wings of insects and birds and the streamlined bodies of whales and fish. One can say that it is the similar habitat that has resulted in selection of similar adaptive features in different groups of organisms but toward the same function. An example of convergent evolution is the similar nature of the flight/wings of insects, birds, pteridosaurs, and bats. All four serve the same function and are similar instructure, but each evolved independently. Some species of the lens of eyes also evolved independently in various animals.

Video Solution:

Q25 **Text Solution:**

Meat was not spoiled, when heated and kept sealed in a vessel.

Video Solution:

Q26 Text Solution:

Bottleneck effect is an evolutionary event in which a very large percentage of a population or species is killed or otherwise prevented from reproducing. Population bottlenecks increase genetic drift. They also increase inbreeding due to the reduced pool of possible mates. In the given case, blue-eyed population has been wiped out while the surviving brown-eyed individuals form the next generation.

Video Solution:

Q27 Text Solution:

As per mutation theory given by Hugo de Vries, the evolution is a discontinuous phenomenon or saltatory phenomenon (single step large mutation).

Video Solution:

Q28 Text Solution:

Genetic drift refers to changes in allele frequency as in genetic drift by chance the allelic frequency will be changed. Heritable variations enable survival of the fittest. Both the assertion and reason are correct but reason is not the right explanation for assertion.

Video Solution:

Q29 Text Solution:

Africa

Video Solution:

Q30 Text Solution:

legs longer than arms

Video Solution: