ULTIMATE KCET

CRASH COURSE 2026

(Zoology) | Lecture – 01

Evolution

By – Raghunath Sir

Recap *of previous lecture*

1. Reproductive Health - Synopsis
2. Most Important MCQs

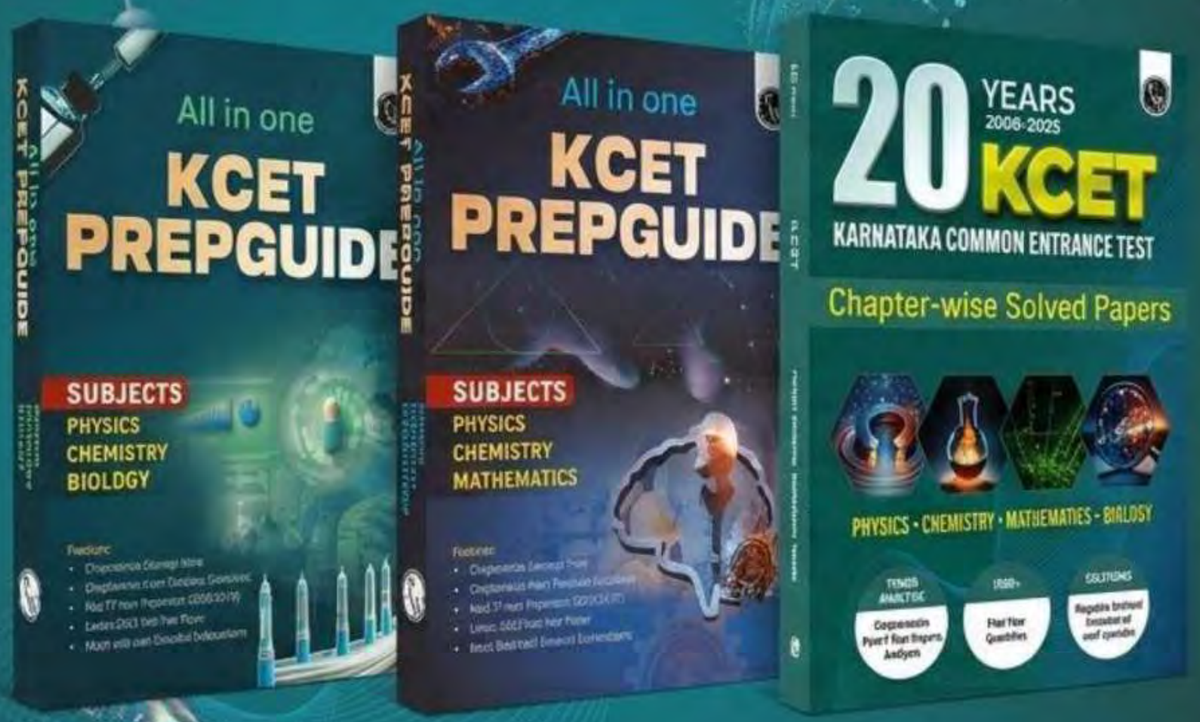
Topics *to be covered*

1. Evolution - Synopsis

2. Most Important MCQs

2-3 questions
KCET

PHYSICS WALLAH



All-in-One + PYQ Power = Your Path to KCET Success!

- Class-wise Distribution of Questions
- Chapterwise Most Probable Questions
- Latest 2025 Past Year Paper
- 3500+ Previous Year Question
- Comprehensive Coverage of 4 Subjects

**BUY NOW!

Available on: amazon | Flipkart | PW Store

Theories of Origin of Life

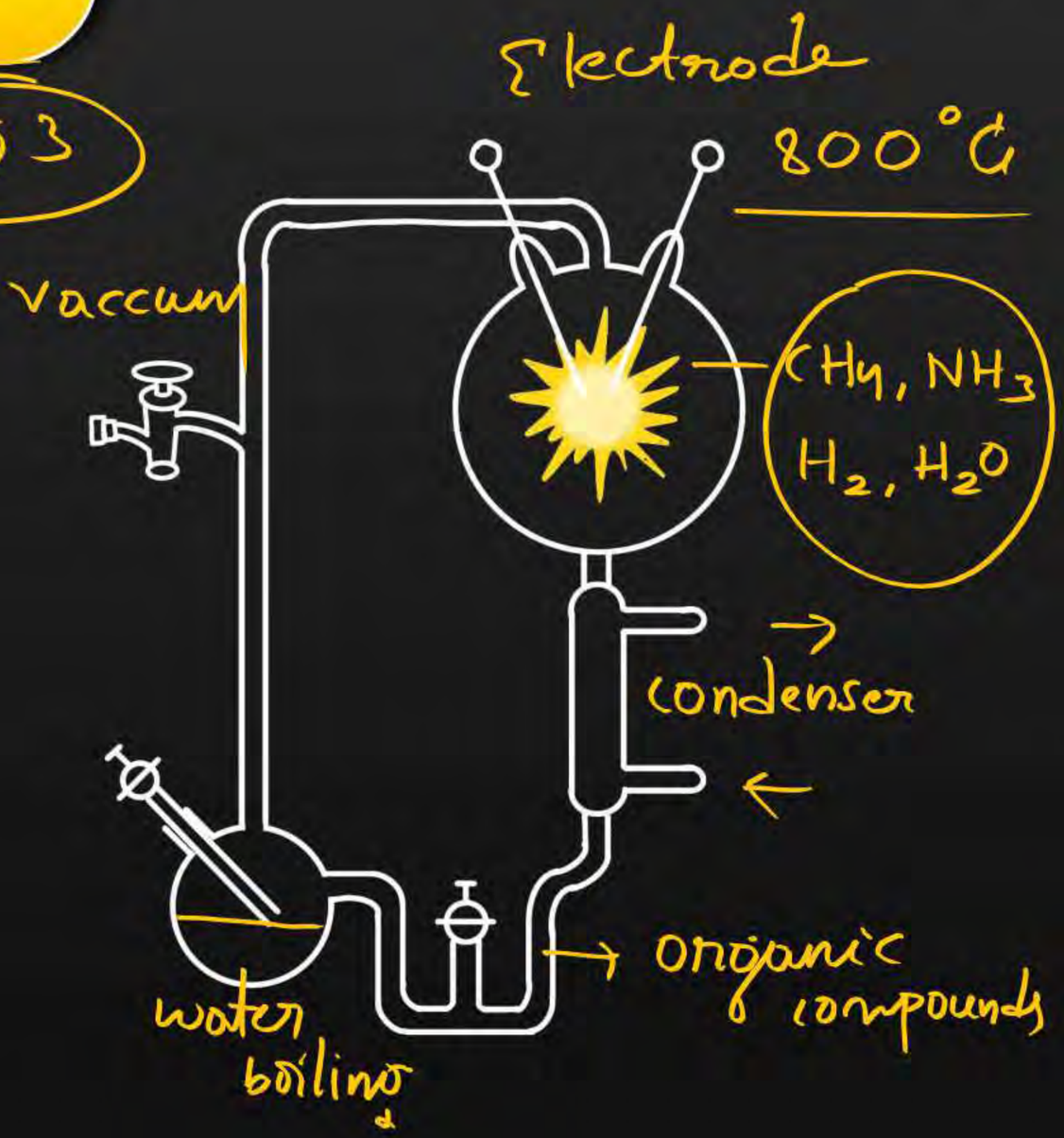
Theory of special creation This theory has three connotations. One, that all living organisms (species or types) that we see, today were created as such. Two, that the diversity was always the same since creation and will be the same in future also. Three, that earth is about 4000 years old	**Theory of panspermia/Cosmozoic theory** Some scientists believe that it came from outside. Early Greek thinkers thought units of life called spores were transferred to different planets including earth.
Theory of spontaneous generation For a long time it was also believed that life came out of decaying and rotting matter like straw, mud, etc. This was the theory of spontaneous generation.	**The theory of chemical evolution** Oparin of Russia and Haldane of England proposed that the first form of life could have come from pre-existing non-living organic molecules (e.g. RNA, protein, etc.) and that formation of life was preceded by chemical evolution

Stanly Miller's Experiment

1953

Conclusions:

1. It provides the experimental evidence for the theory of chemical origin.
2. It showed that the first non-cellular form of life was created about 3 billion years ago.
3. It showed that non-cellular biomolecules exist in the form of DNA, RNA, polysaccharides and proteins. Formation of first cell first non-cellular.



Remember This

Big Bang Theory: Georges Lemaître in 1931

Universe was formed 20 billion years ago.

Earth was formed about 4.5 billion years ago.

Biogenesis was proposed by Louis Pasteur.

Chemical Theory of Evolution: A. I. Oparin and J. B. S. Haldane in 1938

Evidence for Chemical Evolution: S. L. Miller and C. Urey in 1953

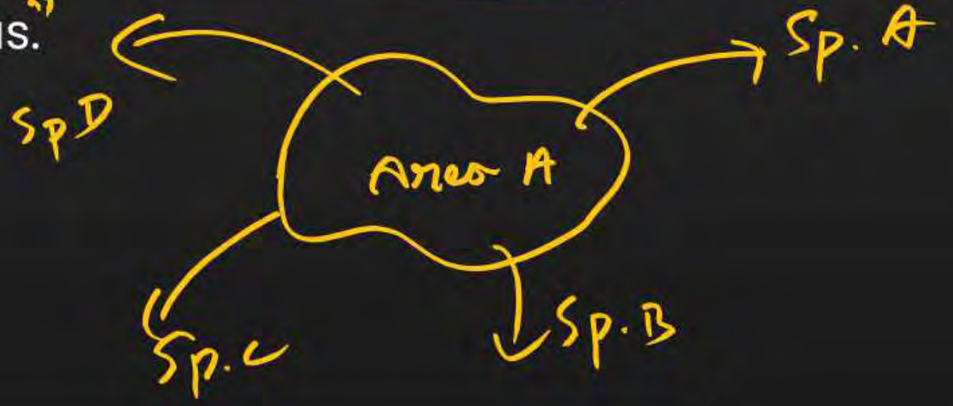
Gases taken in the discharge flask: CH_4, HN_3, H_2O and H_2

Homologous and Analogous Organs

	Homologous Organs	Analogous Organs
1	They differ morphologically	They show superficial resemblance
2	They have similar internal structure	Their internal structure is quite different
3	They perform different functions	They have similar functions
4	Homologous organs show adaptive radiation (divergent evolution)	Analogous organs show convergent evolution
5	They develop in related organisms	They develop in unrelated organisms
	Forelimbs of cheetah, flippers of whale, wings of bats, forelimbs of human.	Wings of birds and butterflies

Adaptive Radiation

It is the evolutionary process in which different species starting from a common point in a geographical area radiate to other geographical areas."



a) **Darwin's finches:**

b) **Marsupials of Australia:**

c) **Placental animals in Australia:**

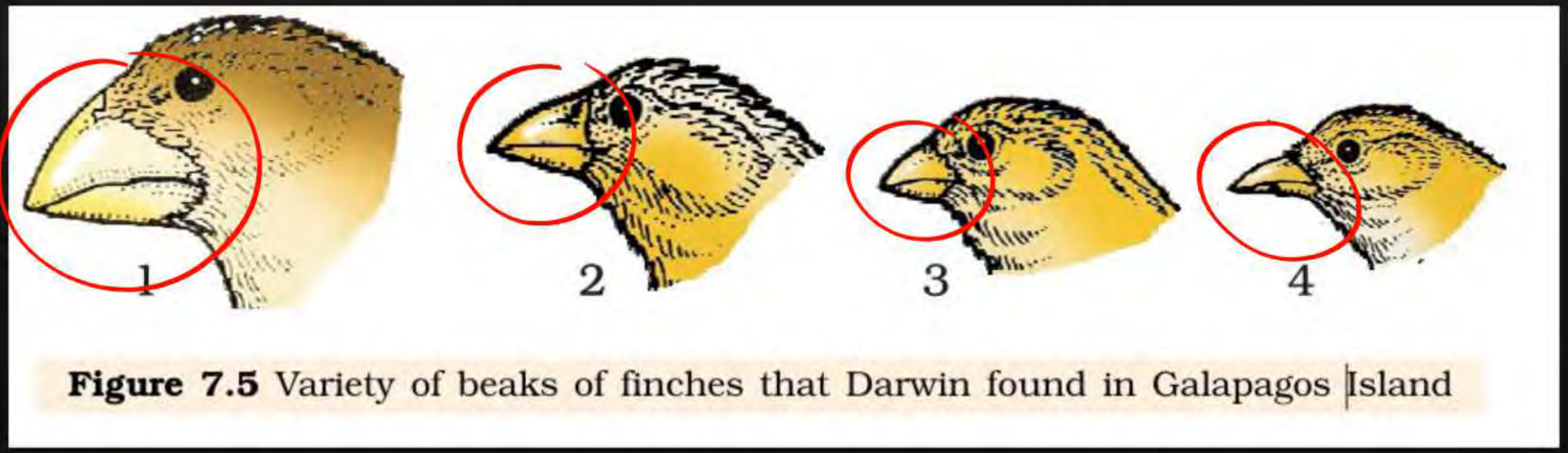
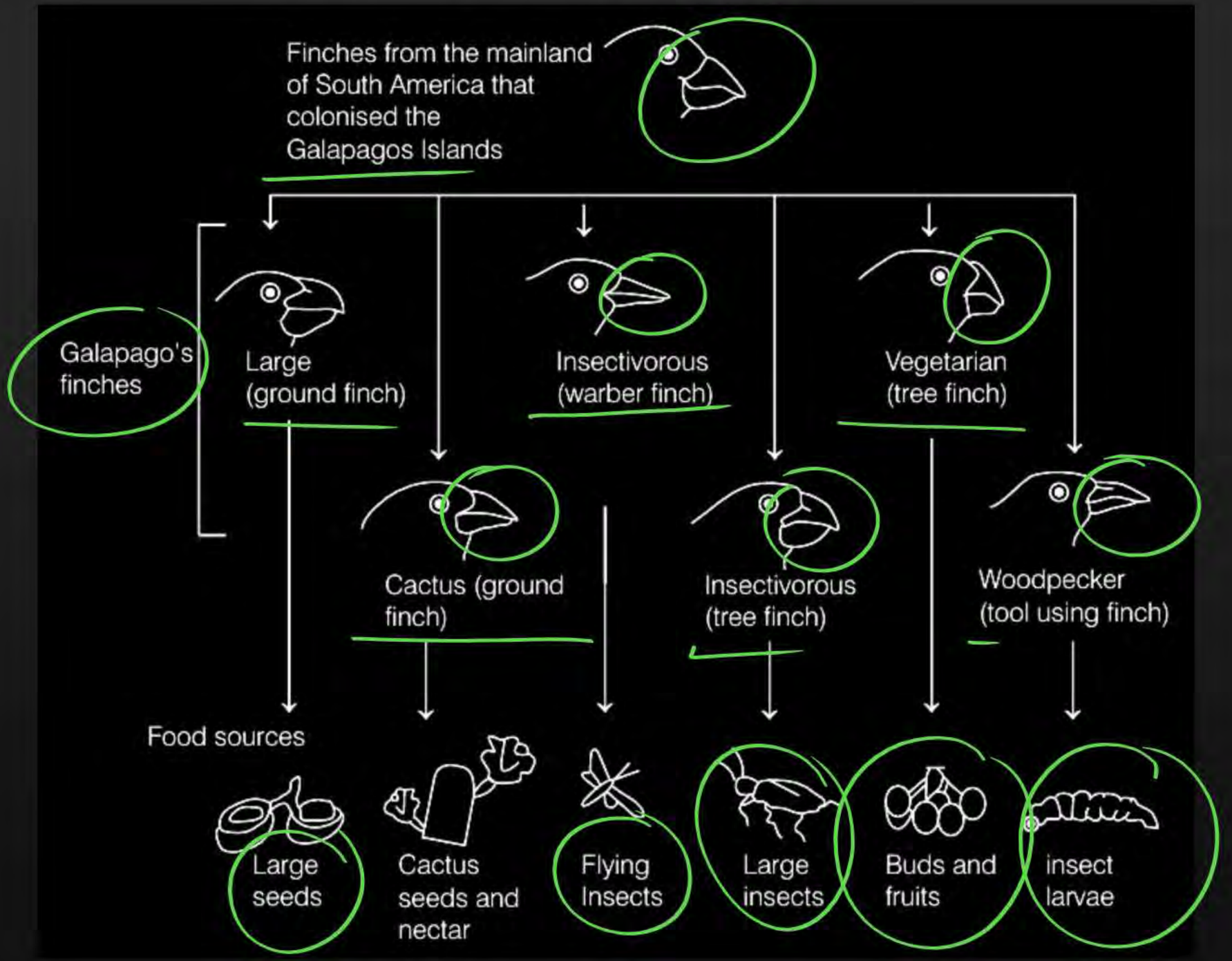
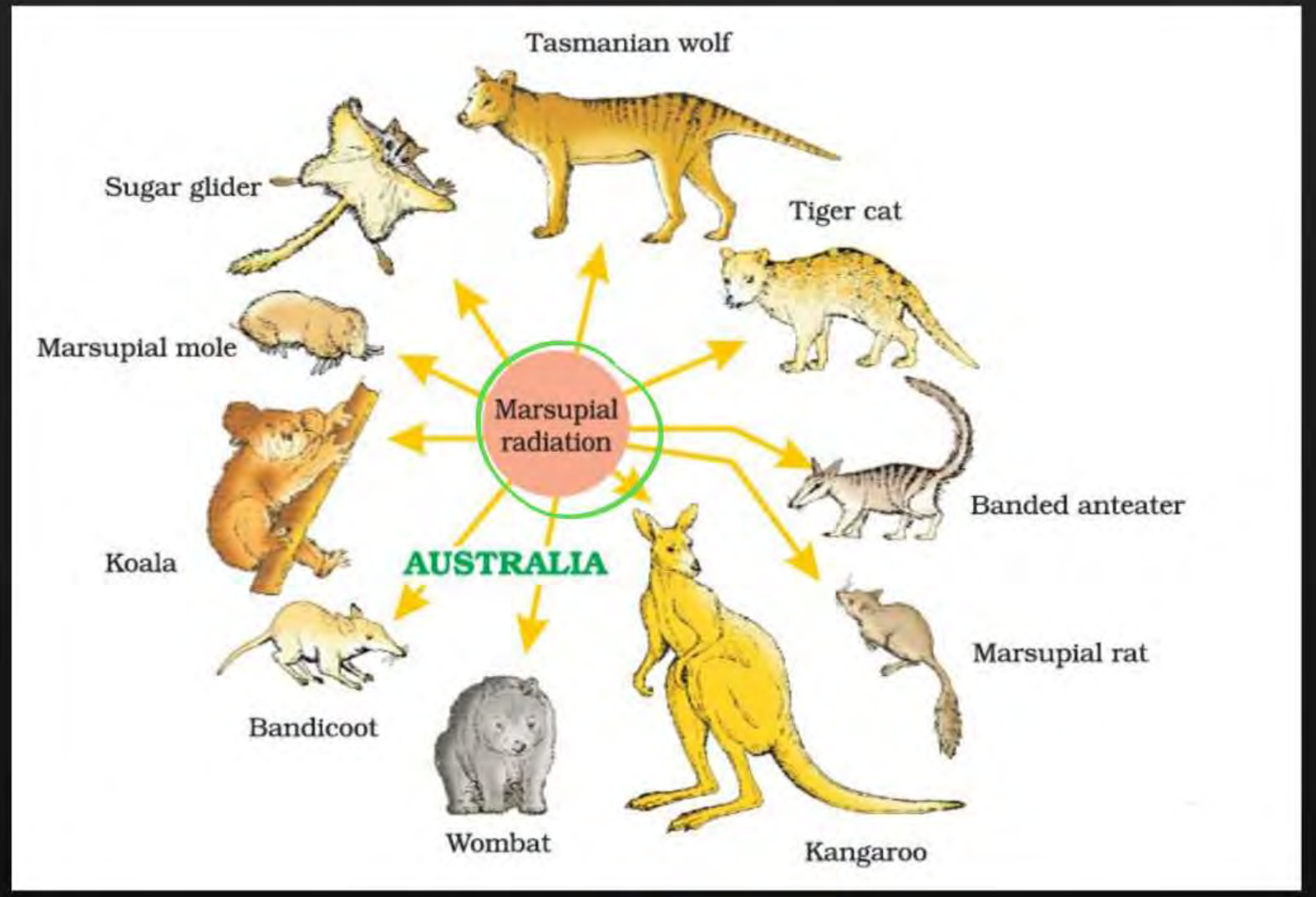


Figure 7.5 Variety of beaks of finches that Darwin found in Galapagos Island


Finches from the mainland of South America that colonised the Galapagos Islands
Galapago's finches
Large (ground finch)
Insectivorous (warber finch)
Vegetarian (tree finch)
Cactus (ground finch)
Insectivorous (tree finch)
Woodpecker (tool using finch)
Food sources
Large seeds
Cactus seeds and nectar
Flying Insects
Large insects
Buds and fruits
insect larvae

Adaptive Radiation



Placental mammals	Australian marsupials
Mole	Marsupial mole
Anteater	Numbat (anteater)
Mouse	Marsupial mouse
Lemur	Spotted cuscus
Flying squirrel	Flying phalanger
Bobcat	Tasmanian tiger cat
Wolf	Tasmanian wolf

Hardy-Weinberg Equilibrium

"This principle states that allelic frequencies in a population are stable and remains constant from generation to generation, i.e., gene pool (total number of genes and their alleles in a population) is constant."

1. Gene migration or gene flow
2. Mutation
3. Genetic drift
4. Genetic recombination
5. Natural Selection

Affecting factors

$p = A$

$q = a$

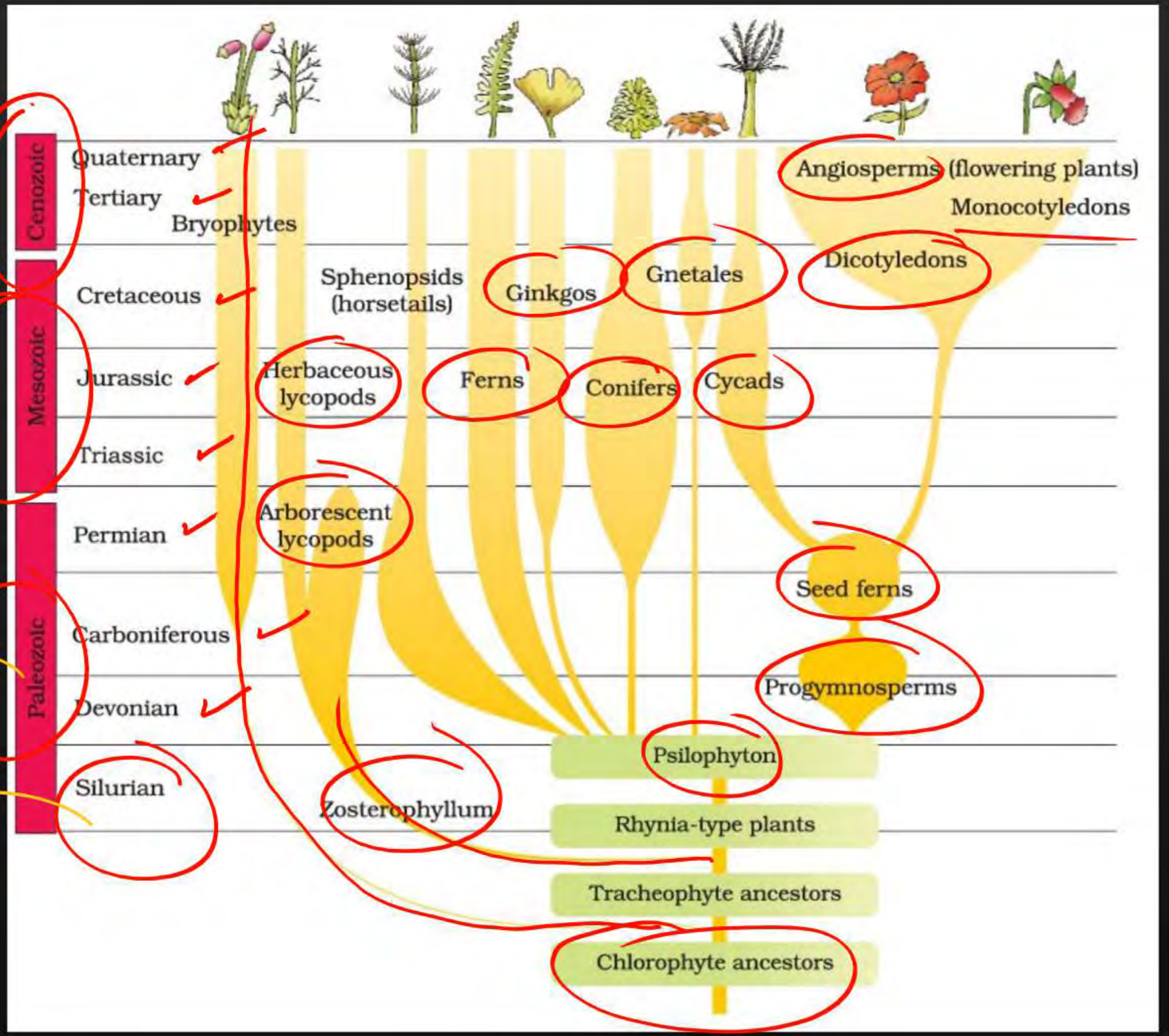
$p + q = 1$

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

p^2 → Homozygous dominant

$2pq$ → Heterozygous individual.

q^2 → Homozygous recessive


Cenozoic
Mesozoic
Paleozoic
Quaternary
Tertiary
Cretaceous
Jurassic
Triassic
Permian
Carboniferous
Devonian
Silurian
Bryophytes
Sphenopsids (horsetails)
Herbaceous lycopods
Arborescent lycopods
Zosterophyllum
Ginkgos
Ferns
Gnetales
Conifers
Cycads
Angiosperms (flowering plants)
Monocotyledons
Dicotyledons
Seed ferns
Progymnosperms
Psilophyton
Rhynia-type plants
Tracheophyte ancestors
Chlorophyte ancestors

Era

Period

ERA	Years in Million	Period	Epoch	Fauna	Flora
Cenozoic	1	Quaternary	Recent (Holocene)	Age of Mammals	Angiosperms Monocotyledons
	6		Pleistocene	Age of Human beings	Age of Angiosperms - Dicotyledons
	10	Tertiary	Pliocene	Human evolution	
	15		Miocene	Mammals and Birds	
	20		Oligocene		
	100		Eocene		
			Paleocene		
Mesozoic	125	Cretaceous		(Golden age of Reptiles) Rise of Dinosaurs	Sphenopsides, Ginkgos, Gnetales, (Dicotyledons)
	150	Jurassic			Herbaceous lycopods, Ferns, Conifers, Cycads
	180	Triassic			

ERA	Years in Million	Period	Epoch	Fauna	Flora
Paleozoic	205	Permian		Mammal like reptiles	Arborescent lycopods
	230	Carboniferous	Pennsylvanian	Earliest reptiles	Seed ferns and Bryophytes
	255		Mississippian	Earliest Amphibians and abundant Echinoderms	
	315	Devonian		Age of fishes	Progymnosperms
	350	Silurian		Earliest fishes and land invertebrates	Zosterophyllum
	430	Ordovician		Dominance of invertebrates	Appearance of first land plants
	510	Cambrian		Fossil invertebrates	Origin of algae
Precambrian	3000	Upper		Multicellular organisms	
		Middle		Appearance of eukaryotes	
		Lower			Planktons prokaryotes

Human Evolution

Fossils	Features
Dryopithecus	They were hairy and walked like gorillas and chimpanzees. Ape-like hominid. Lived 15 mya.
Ramapithecus	They were hairy and walked like gorillas and chimpanzees. Man-like hominid. Lived 14 mya
Australopithecus	Probably lived in East African grasslands. He was about 1.5 meters tall with bipedal locomotion. They hunted with stone weapons
Homo habilis	First human-like being the hominid. Probably did not eat meat. The brain capacities were between 650-800cc.
Homo erectus	Probably eat meat, large brain around 900cc. Fossils discovered in Java in 1891.
Neanderthal	They used hides to protect their body and buried their dead. Near east and central Asia. with a brain size of 1400cc.

Homo sapiens → 1350 - 1450 cc

18,000 years - cave art

10,000 ya - Agriculture was started.

Question (KCET -- 2017)

Which of the following is the identifiable character of Neanderthal man?

A. Brain capacity 650 cc – 800 cc

B. Developed prehistoric cave art

C. Lived before 2 mya

D. Buried their dead

Question (KCET - 2018)

The primary gases that were used by Miller in his experiment are

CH_4, NH_3, H_2O, H_2

A. CH4, NH3, H2O, H2

B. CH4, CO2, N2, SO2

C. CH4, CO2, N2, NH3

D. CH4, N2, NH3, H2

Question

From his experiments, S.L. Miller produced amino acids by mixing which of the following in a closed flask?

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.

Question (KCET - 2018)

The allele frequency of 'A' and 'a' in a population are 0.6 and 0.4 respectively. The expected frequency of heterozygous individuals is

A 48%

B 36%

C 16%

D 24%

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

$2pq = 2 \times 0.6 \times 0.4$

$2pq = 0.48$

48%

A = 0.6 (p)

a = 0.4 (q)

2pq = ?

Question (KCET - 2019)

The brain capacity of Homo habilis is

→ First Human like being.

A 1800 cc

B Between 650 cc – 800 cc ✓

C 900 cc — H. erectus

D 1400 cc — Neanderthal.

Question (KCET - 2020)

Which among the following was the biggest land dinosaur?

A Triceratops

B Stegosaurus

C Tyrannosaurus rex

D Brachiosaurus

40 feet long

Question (KCET - 2020)

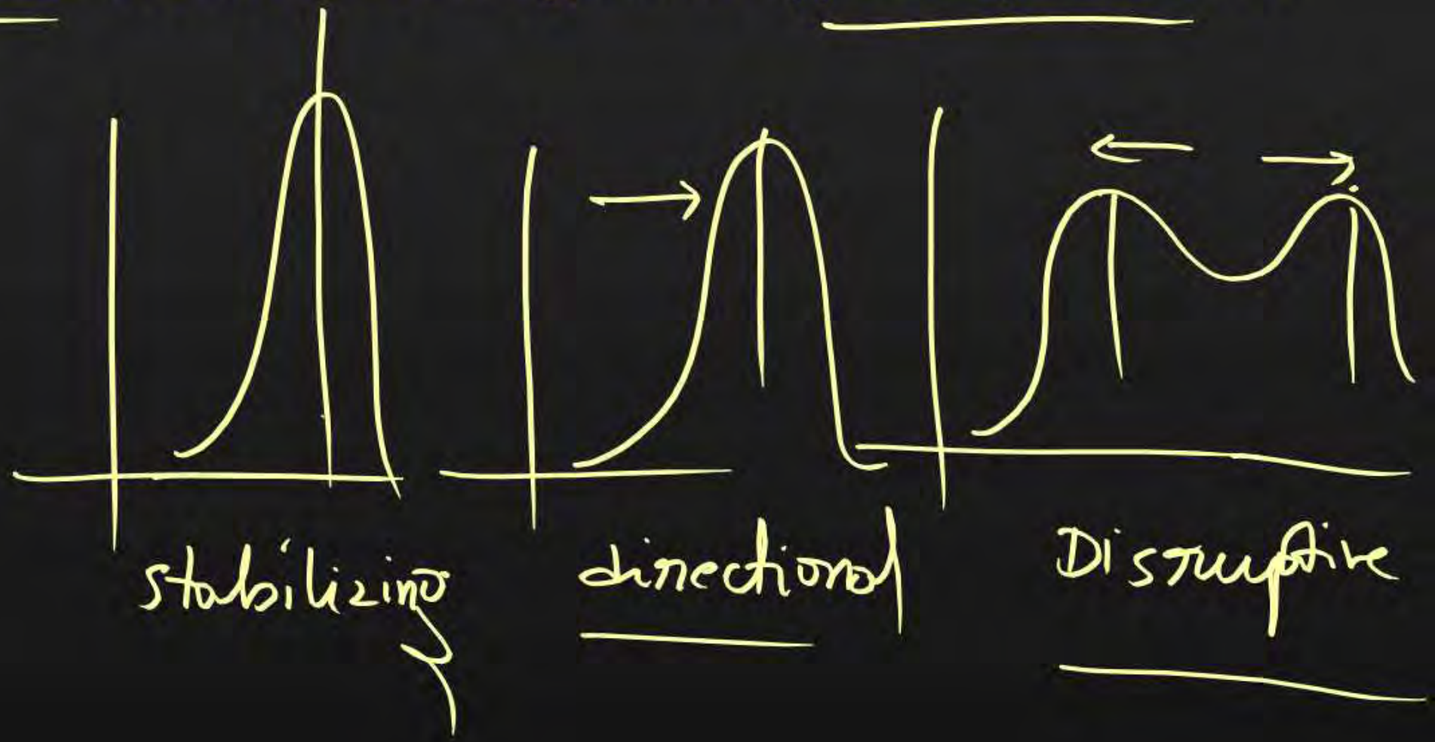
In a population of plants, some were extremely tall, and the remaining were extremely dwarf. No plants of the population showed intermediate height. The type of operation of natural selection in the above case is

A. Disruptive

B. Balancing

C. Directional

D. Stabilising



Question (KCET - 2022)

The first human like being is

A *Homo sapiens*

B *Homo erectus*

C *Homo menthus*

D *Homo habilis*

Question

Who disapproved the theory of spontaneous generation?

→ Non-living things → living organisms.

A. Urey and Miller ✗

B. Oparin ✗

C. Louis pasteur ✓ → Biogenesis

D. Aristotle ✗

Question

The theory of spontaneous generation stated that

Abiogenesis

A. Life arose from living forms only

B. Life can arise from both living and nonliving

C. Life can arise from nonliving things only

D. Life arises spontaneously, neither from living nor from the non-living.

Question

Which one of the following scientist's name is correctly matched with the theory put forth by him?

A. de Vries - Theory of natural selection

B. Darwin - Theory of pangenesis

C. Weismann-Theory of continuity of germplasm

D. Pasteur -Theory of inheritance of acquired characters

Question

Given below are two statements.

Statement I: The Big Bang theory attempts to explain to us the origin of universe.

Statement II: Oxygen combined with urea and methane to form water, CO_2 and others.

In the light of the above statements, choose the most appropriate answer from the options given below.

A. Both Statement I and Statement II are correct.

B. Statement I is correct but Statement II is incorrect.

C. Statement I is incorrect but Statement II is correct.

D. Both Statement I and Statement II are incorrect.

Question

Match the Column – I with Column – II.

	Column I		Column II
A	Fossils	I	Analogous organs
B	Theory of abiogenesis	II	First human-like being
C	Convergent evolution	III	Paleontological evidence
D	Homo habilis	IV	Living organisms originated from non-living matter

A. A-II, B-I, C-III, D-IV

B. A-III, B-IV, C-I, D-II

C. A-III, B-IV, C-II, D-I

D. A-I, B-IV, C-III, D-II

Question

Evidence of evolution from fossils is known as;

A. Paleontological evidence.

B. Embryological evidence.

C. Morphological evidence.

D. Biochemical evidence.

Question

The first viviparous mammals whose fossils are small-sized were like:

A. Shrews

B. Monkeys

C. Rats

D. Lobefins

Question

Flippers of Penguins and Dolphins are examples of:

→ swimming

A. Convergent evolution ✓ → Analogous organs.

B. Industrial melanism ✗

C. Natural selection ✗

D. Adaptive radiation ✗

Question

Hugo de Vries worked on:

Mutation

A. Pisum sativum

B. Evening primrose → Oenothera lamarckiana

C. Hibiscus

D. Drosophila

Question

Statement-I: Extinct organisms, such as dinosaurs, can be identified through fossil records.

Statement-II: All embryonic features observed are retained in adult forms.

Karl von Bear

(A) Statement I is correct but Statement II is incorrect

(B) Statement I is incorrect but Statement II is correct

(C) Both Statement I and Statement II are correct

(D) Both Statement I and Statement II are incorrect

Question

The wrongly matched pair w.r.t. the organisms and their probable time of evolution is:

Invertebrates - 500 my

A. Jawless fish - around 350 mya ✓

B. Lobefins - around 350 mya ✓

coelecanth

1938

C. Fish-like giant reptiles - around 320 mya ✗ 200

D. Sea weeds - around 320 mya ✓

Question

Given below are two statements:

Statement I: In Miller's experiment, molecules produced were organic monomers.

Statement II: Amino acids were formed at the end of experiment.

In the light of the above statements, choose the most appropriate answer from the options given below.

A Statement I is correct but Statement II is incorrect.

B Statement I is incorrect but Statement II is correct.

C Both Statement I and Statement II are correct.

D Both Statement I and Statement II are incorrect.

Question

Consider the following statements-

I. Darwin could not explain genetic variations.

II. Genetic variations occur due to sexual selection.

Choose the correct option:

A. Statement I is correct, but II is incorrect

B. Statement I is incorrect, but II is correct

C. Both statements I and II are correct

D. Both statements I and II are incorrect

Question

According to Lamarckism, long necked giraffes evolved because:

A. Nature selected only long necked ones.

B. Humans preferred only long necked ones.

C. Short necks suddenly changed into long necks.

D. Of stretching of necks over many generations by short necked ones.

Question

Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that

A. Darwin was correct

B. Tail is an essential organ

C. Mutation theory is wrong

D. Lamarckism was wrong in inheritance of acquired characters

Question

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

over production
struggle for existance
survival of fittest
Natural selection

Question

Which of the following organisms are thought to be evolved into first amphibians?

A *Petromyzon*

B *Lamprey*

C *Coelacanth*

D *Ascidia*

lobefins

Question

Which of the following is incorrect?

B & D

A. Earth originated about 4500 millions year back.

B. The first reptiles were like shrews

C. Experimental proof that some simple molecules like H_2, NH_3, CH_4 and H_2O gave rise to amino acids during origin of life was provided by S.L. Miller.

D. Oxygen was present at the time of origin of earth

Question

H.W

Match List-I with List-II.

	Column I (Placental Animals		Column II (Australian marsupials)
A	Flying squirrel	I	Spotted cuscus
B	Lemur	II	Tasmanian tiger cat
C	Bobcat	III	Tasmanian wolf
D	Wolf	IV	Flying phalanger

A. A-I, B-II, C-III, D-IV

B. A-II, B-I, C-III, D-IV

C. A-IV, B-I, C-II, D-III

D. A-III, B-I, C-II, D-IV

Question

Which of the following statement is incorrect?

Charles Darwin

A. The work of Malthus on population influenced Lamarck

B. Galaxies contain stars and clouds of gas and dust

C. Huge clusters of galaxies comprise the universe

D. Polysaccharides and proteins are giant molecules

Question

According to Darwin, evolution is

A. Sudden but discontinuous process.

B. Slow, gradual, continuous process.

C. Slow, sudden and discontinuous process.

D. Slow and discontinuous process.

Question

H.W

Read the following statements (I-V).

I. Prehistoric cave art developed about 18,000 years ago.

II. Branching descent is the only key concepts of Lamarck Theory of Evolution.

III. Dinosaurs became extinct 20 million years ago.

IV. Adaptive radiation is the evolution of species from a common point, spreading to various habitats.

V. Evolution is a stochastic process.

Which of the following statements are incorrect?

A II and III only

B II, III and IV only

C III, IV and V only

D I, IV and V only

Question

Which is correct expected reason for disappearance of dinosaurs from earth?

A. Change in climate

B. Evolved into birds

C. Evolved into reptiles

65 million years ago

Reptile

(A) A and B only

(B) B and C only

(C) A and C only

(D) A, B and C

Question

Correct sequence is

oldest → Recent

A Palaeozoic → Mesozoic → Coenozoic

B Mesozoic → Archaeozoic → Proterozoic

C Palaeozoic → Archaeozoic → Coenozoic

D Archaeozoic → Palaeozoic → Proterozoic

Question

Pouched mammals of Australia survived because of lack of competition from any other mammal due to:

A. Continental drift

B. Anthropogenic action

C. Chemical evolution

D. Both (B) and (C)

Question

H.W

The question is asking for the correct order of the geological periods of the Paleozoic Era based on the geological time scale.

A Cambrian → Ordovician → Devonian → Silurian → Carboniferous → Permian

B Silurian → Devonian → Cambrian → Ordovician → Permian → Carboniferous

C Cambrian → Devonian → Ordovician → Silurian → Carboniferous → Permian

D Cambrian → Ordovician → Silurian → Devonian → Carboniferous → Permian

Question

H.W

Which of the following is an incorrect match of period of geological time scale with the events of evolution of history of life?

A Ordovician - Age of Invertebrates

B Devonian - Age of Reptiles

C Carboniferous - Age of Amphibians

D Permian - Origin of Mammals

Question

Analogous structures are a result of

A. Shared ancestry

B. Stabilising selection

C. Divergent evolution

D. Convergent evolution

Question

Potato and sweet potato are an example of;

A. Homologous organs

B. Analogous organs

C. Rudimentary structures

D. Two species of the same genus

Question

Match List-I with List-II.

	Column I		Column II
A	Adaptive radiation	I	Selection of resistant due to excessive 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

A. A–II; B–I; C–IV; D–III

B. A–I; B–IV; C–III; D–II

C. A–IV; B–III; C–II; D–I

D. A–III; B–II; C–I; D–IV

Question

Assertion (A): Analogous structures are a result of divergent evolution

Reason (R): The eye of the Octopus and of mammals or the flippers of Penguins and Dolphins are examples for analogous evolution.

A. Both Assertion (A) and Reason (R) are true and (R) is correct explanation of (A).

B. Both Assertion (A) and Reason (R) are true but (R) is not a correct explanation of (A).

C. Assertion (A) is true, but Reason (R) is false.

D. Assertion (A) is false, but Reason (R) is true.

Question

All the following are examples of homologous organs, except;

A. Arm of man and flipper of whale.

B. Thorn of Bougainvillea and tendril of Cucurbita.

C. Eye of an Octopus and eye of a mammal.

D. Brain of frog and man.

Question

Gene pool of a population tends to remain stable if the population is large, without large scale mutations, without migration and with:

A Random mating

B Moderate environmental changes

C Natural selection

D Reduction in predators

Question

Genetic drift

A. Is an orderly change in gene frequencies

B. Is selection of peripheral characters

C. Produces great fluctuations in large populations

D. Is a random change in gene frequencies

Question

A condition under which nature eliminates the intermediate type and favors both extremes is called;

A. Stabilising selection.

B. Progressive selection.

C. Disruptive selection.

D. Directional selection.

Question

Which of the following ancestors of man gave proper burial of dead bodies for the first time?

A *Australopithecines*

B *Dryopithecus*

C *Neanderthal man*

D *Homo habilis*

Question

Match List-I with List-II.

	Column I		Column II
A	Neanderthal man	I	Hunted with stone weapons but ate fruits
B	Ramapithecus	II	Lived in near east and central Asia
C	Australopithecines	III	Probably ate meat
D	Homo erectus	IV	Walked like gorillas (Man-like)

A. A-I, B-II, C-III, D-IV

B. A-II, B-IV, C-I, D-III

C. A-III, B-I, C-IV, D-II

D. A-IV, B-III, C-II, D-I

Thank You