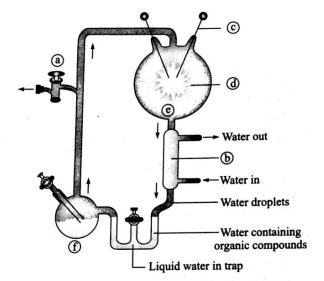
## OPIC 1: Origin of Life

### Evolution of Life Forms—A Theory

- 1. Stellar distances are measured in
  - (a) Kilometers
- (B) Meters
- (C) Nanometers
- (D) Light years
- 2. Read the following statements and find out the incorrect statement.
  - (a) The universe is almost 20 million years old.
  - (b) Huge clusters of galaxies comprise the universe.
  - (c) Galaxies contain stars and clouds of gas and dust.
  - (d) Considering the size of earth, universe is indeed a speck.
  - (e) Big bang theory attempts to explain the origin of universe.
- (A) a,b and c
- (B) b and c
- (C) a and d
- (D) only a
- 3. Recognise the figure and find out the correct matching.
  - (A) a—condenser, b—to vaccum pump, c—electrode,
     d—spark discharge, e—boiling water, f—gases
  - (B) b—condenser, a—to vaccum pump, d—electrode, c—spark discharge, f—boiling water, e—gases
  - (C) b—condenser, a—to vaccum pump, c—electrode, d—spark discharge, e—boiling water, f—gases
  - (D) b—condenser, a—to vaccum pump, c—electrode, d—spark discharge, f—boiling water, e—gases



- 4. Chemical theory for origin of life was given by
  - (A) Stanley Miller
- (B) Oparin and Haldane
- (C) Spallanzani
- (D) Louis Pasteur
- 5. The first life on earth originated from nonliving materials has been explained by
  - (A) Theory of biogenesis
  - (B) Theory of abiogenesis
  - (C) Theory of special creation
  - (D) Theory of extra-terrestrial origin
- 6. "Every cell of the body contributes gemmules to the germ cells and so shares in the transmission of inherited characters" This theory is known as

| 7. ( | A) Theory of inheritance of acquired characteristic B) Theory of germplasm C) Theory of pangenesis D) Theory of mutations Organic compounds evolved on earth and required for origin of life were A) Proteins and nucleic acids (B) Urea and amino acids (C) Proteins and nucleic acids (D) Urea and nucleic acids | 16. | Atmosphere of earth just before the origin of life of sisted of  (A) Water vapours, CH <sub>4</sub> , NH <sub>3</sub> and Oxygen  (B) CO <sub>2</sub> , NH <sub>3</sub> and CH <sub>4</sub> (C) CH <sub>4</sub> , NH <sub>3</sub> , H <sub>2</sub> and water vapours  (D) CH <sub>4</sub> , O <sub>3</sub> , O <sub>2</sub> and water vapours  Miller's experiment provided evidence is theory of  (A) Special creation  (B) Biogenesis  (C) Abiogenesis  (D) Organic evolution |
|------|--|-----|---|
| 8.   | Scientists believes that life on earth originated by  (A) Spontaneous generation  (B) Chemical evolution/Abiogenesis  (C) Special creation   |     | Experimental proof that organic compounds formed basis of evolution was given by  (A) Oparin  (B) Pasteur  (C) Miller and Urey  (D) Spallanzani   |
| 9.   | (D) Extraterrestrial transfer  Match the columns I and II, and choose the correct combination from the options given.  | 18. | Swan-necked flask experiment was performed by (A) Louis Pasteur (B) Robert Koch (C) Francisco Redi (D) Aristotle  |
|      | Column I  (a) Origin of earth  (b) Origin of life  Column II  1. 4500 mya  2. 4000mya  | 19. | Spark discharge apparatus for testing chemical origin of life was designed by  (A) Urey and Miller  (B) Jacob and Monod  (C) Oparin and Haldane  (D) Dixon and Joly   |
|      | (c) Origin of first cellular form of 3. 3000 mya life  | 20. | Gaseous mixture used by Miller for synthesis of amin acids through heat and electric discharge included   |
|      | (d) Origin of first non cellular 4. 2000 mya form of life  |     | <ul> <li>(A) Methane, ammonia, hydrogen and water vapours</li> <li>(B) Methane, ammonia, nitrogen and water vapours</li> </ul>  |
|      | (A) a—1, b—2, c—3, d—4<br>(B) a—2, b—1, c—4, d—3<br>(C) a—1, b—2, c—4, d—3   |     | <ul><li>(C) Nitrogen, methane, oxygen and water</li><li>(D) Ammonia, carbon dioxide, nitrogen and water vapours</li></ul>   |
| 10.  | (D) a-2, b-1, c-3, d-4 In early earth, water and carbon dioxide was produced by the combination of O <sub>2</sub> with   | 21. | Approximate age of earth (in million years) is (A) 3600 (B) 4500 (C) 7200 (D) 6000  |
|      | <ul><li>(A) Ammonia and methane</li><li>(B) Organic matter</li><li>(C) Hydrogen sulphide</li><li>(D) Sulphates and nitrates</li></ul>  |     | Most advanced theory of origin of life is that of (A) Catastrophic (B) Haldane and Oparis (C) Cosmozoic (D) Spontaneous   |
| 11.  | Which of the following amino acids was not found to be synthesised in Miller's experiment?  (A) Alanine  (B) Glycine   | 23. | Which is the most important for origin of life?  (A) Oxygen  (B) Water  (C) Nitrogen  (D) Carbon  |
| 12.  | (C) Aspartic acid (D) Glutamic acid  2. Extra-terrestrial origin of life was proposed by theory of (A) Catastrophism   |     | Theory of spontaneous creation was supported by (A) Van Halmont (B) Redi (C) Spallanzani (D) Pasteur  |
|      | <ul><li>(B) Spontaneous generation</li><li>(C) Special creation</li><li>(D) Panspermia</li></ul>   |     | One of the greatest advocates of the theory of specific creation was  (A) C. Darwin  (B) Aristotle  |
| 13   | 6. Experiment to prove that synthesis of organic compounds formed the basis of origin of life was performed by (A) Oparin (B) Haldane (C) Miller (D) Fox   | 26. | (C) Father Saurez (D) Huxley Which was absent in the atmosphere at the time of original of life?  |
| 14   | 4. Theory of abiogenesis or spontaneous generation was finally disapproved by  (A) Louis Pasteur  (B) A.I.Oparin   | 27. | (A) NH <sub>3</sub> (B) H <sub>2</sub> (C) O <sub>2</sub> (D) CH <sub>4</sub> Theory of pangenesis was given by (A) Darwin (B) Lamarck  |
|      | (C) A.B. Wallace (D) Sidney Fox  |     | (C) Hugo ds Vries (D) Oparin  |

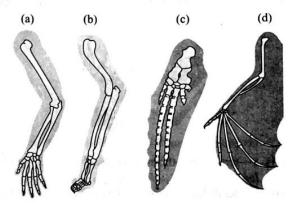
- 28. Life cannot originate from inorganic materials now because of
  - (A) Low atmospheric temperature
  - (B) High degree of pollution
  - (C) High atmospheric oxygen
  - (D) Absence of raw materials
- 29. Presence of NaCl in body fluid indicates that life originated in
  - (A) Primitive ocean
- (B) Rain water lakes
- (C) Salt solution
- (D) All the above
- 30. First photosynthetic organisms to appear on earth were
  - (A) Bacteria
- (B) Green algae
- (C) Cyanobacteria
- (D) Bryophytes
- 31. Choose the correct sequence during formation of chemicals on early earth
  - (A) Ammonia, Water, Nucleic acid, Protein
  - (B) Ammonia, Proteins, Carbohydrates, Nucleic acid
  - (C) Ammonia, Nucleic acid, Proteins, Carbohydrates
  - (D) Proteins, Carbohydrate, Water, Nucleic acid
- Russian scientist who proposed the theory of origin of life was
  - (A) Oparin
- (B) Haldane
- (C) Miller
- (D) Fox
- 33. Oparin's theory is based on
  - (A) Artificial synthesis
  - (B) Spontaneous generation
  - (C) God's Creation
  - (D) Panspermia
- 34. Which one is considered the first biological catalyst when life originated on earth?
  - (A) RNA

- (B) DNA
- (C) Protein
- (D) Lipid.

## **TOPIC 2: Evidences for Evolution**

- 35. Choose the wrong statement.
  - (A) Louis Pasteur demonstrated that life comes only form pre-existing life.
  - (B) S.L. Miller observed that electric discharge in a flask containing CH<sub>4</sub>, H<sub>2</sub>, NH<sub>3</sub> and water vapours at 800°C formed amino acids.
  - (C) Flippers of penguins and dolphins are examples of homology.
  - (D) Analogous structures are the result of convergent evolution.
- 36. Biogenetic law/recapitulation theory was proposed by
  - (A) Wallace
- (B) Lamarck
- (C) Haeckel
- (D) Mendel
- 37. "Continuity of germplasm" theory was given
  - (A) De Vries
- (B) Weismann
- (C) Darwin
- (D) Lamarck

- 38. Birbal Sahni Institute of Palaeobotany is located in
  - (A) Lucknow
- (B) Delhi
- (C) Kolkata
- (D) Kanpur
- **39.** Presence of gill slits in the embryos of all vertebrates supports the theory of
  - (A) Organic evolution
- (B) Biogenesis
- (C) Metamorphosis
- (D) Recapitulation
- **40.** Similarities between organisms of different genotypes is due to
  - (A) Convergent evolution
  - (B) Divergent evolution
  - (C) Microevolution
  - (D) Macroevolution
- 41. Recognise the figure and find out the correct matching.



- (A) a-man, b-whale, c-cheetah, d-bat
- (B) a-man, c-whale, b-cheetah, d-bat
- (C) a-man, d-whale, c-cheetah, b-bat
- (D) b-man, c-whale, a-cheetah, d-bat
- 42. Analogous organs are
  - (A) Different origin but similar functions
  - (B) Common origin and common functions
  - (C) Different origin and different functions
  - (D) Common origin but different functions
- 43. Homologous organs are
  - (A) Wings of Pigeon and Butterfly
  - (B) Wings of Pigeon and Housefly
  - (C) Wings of Pigeon and arms of Humans
  - (D) Wings of Bat, Housefly and Butterfly
- 44. Resemblance between widely different groups due to a common adaptation is
  - (A) Parallel evolution
  - (B) Divergent evolution
  - (C) Convergent evolution
  - (D) Retrogressive evolution
- 45. Homologous organs are
  - (A) Wings of insects and Bat
  - (B) Gills of Fish and lungs of Rabbit
  - (C) Pectoral fins of Fish and fore limbs of Horse
  - (D) Wings of Grasshopper and Crow

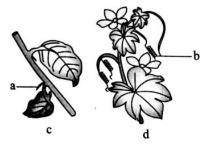
(D) Uranium-lead

( losely related -

(A) Convergent

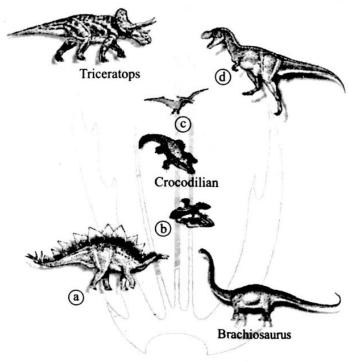
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- 46. Which one correctly describes homologous structures?
  - (A) Organs with anatomical similarities but performing different functions
  - (B) Organs with anatomical dissimilarities but performing same function
  - (C) Organs that have no function now but had an important function in ancestors
  - (D) Organs appearing only in embryonic stage and disappearing later in the adult
- 47. Convergent evolution is illustrated by
  - (A) Rat and Dog
  - (B) Bacterium and Protozoan
  - (C) Starfish and Cuttle fish
  - (D) Dogfish and Whale
- 48. Recognise the figure and find out the correct matching.



- (A) a-tendril, b-thorn, c-Cucurbia, d-Bougainvillea
- (B) b-tendril, a-thorn, d-Cucurbia, c-Bougainvil-
- (C) a-tendril, b-thorn, d--Cucurbia, c-Bougainvil-
- (D) b-tendril, a-thorn, c-Cucurbia, d-Bougainvil-
- 49. Which of the following pairs of structures is homologous?
  - (A) Wings of Grasshopper and forelimbs of Flying Squirrel
  - (B) Tentacles of Hydra and arms of Starfish
  - (C) Forelimbs of a Bat and forelegs of a Horse
  - (D) Wings of a birds and wings of a Moth
- 50. Which is relatively most accurate method of dating of fossils?
  - (A) Radiocarbon method
  - (B) Potassium-Argon method
  - (C) Electron spin-resonance method
  - (D) Uranium-lead method
- 51. Closely related species with different traits exhibit
  - (A) Convergent evolution
- (B) Divergent evolution
- (C) Parallel evolution
- (D) None of the above
- 52. Potato and Sweet potato have edible parts which are
  - (A) Homologous
  - (B) Analogous
  - (C) Recent introductions
  - (D) Two species of the same genus

- 53. Which one provides direct and solid evidence in favour through ages?
  - (A) Atavism
  - (B) Paleontology/fossils
  - (C) Vestigial organs
  - (D) Galapagos island fauna
- 54. Tachyglossus is connecting link between
  - (A) Reptiles and mammals
- (B) Reptiles and birds
- (C) Amphibians and reptiles (D) Birds and mammals
- 55. Recognise the figure and find out the correct matching



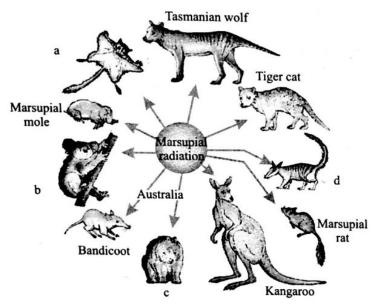
- (A) a—Archaeopteryx, b—Tyrannosaurs, c—Stegosaurs, d-Pteranodon
- (B) d—Archaeopteryx, c—Tyrannosaurs, a—Stegosaurs, b-Pteranodon
- (C) c—Archaeopteryx, d—Tyrannosaurs, b—Stegosaurs, a-Pteranodon
- (D) b—Archaeopteryx, d—Tyrannosaurs, a—Stegosaurs, c-Pteranodon
- 56. Vestiges of girdles are found in
  - (A) Rattle snake
- (B) Krait

(C) Cobra

- (D) Python
- 57. Evidence for evolution from fossils belong to the
  - (A) Biogeography
- (B) Embryology
- (C) Paleontology
- (D) Anatomy
- 58. Example of homologous structures is/are
  - (A) Optic lobes of brain
- (B) Heart of vertebrates
- (C) Cerebrum of brain
- (D) All of the above
- 59. Which is incorrect?
  - (A) Wings of insects and bat are homologous
  - (B) Wings of insects and bats are analogous
  - (C) Wings of bats and birds are homologous
  - (D) Wings of insects and birds are analogous

|                          | timbs of humans and wings of hind  |     |   |
|--------------------------|--|-----|---|
| 60.                      | Forelimbs of humans and wings of birds are  (A) Analogous organs  (B) Homologous organs  | 68. | Darwin judged the fitness of individual through                                 |
|                          | (C) Parallel organs (D) Vestigial organs   |     | (A) Ability to defend   |
|                          | (C)  |     | (B) Strategy for obtaining food   |
|                          | PIC 3: Adaptive Radiation  |     | <ul><li>(C) Number of offspring</li><li>(D) Dominance over others</li></ul>     |
| _                        |  | 69. | A theory explaining the mechanism of evolution based on                         |
| اماه                     | logical Evolution and Mechanism of Evolution   |     | change of gene structure was forward by   |
|                          |  |     | (A) De Vries (B) Darwin   |
| 61.                      | The process of evolution of different species in a given geographical area starting from a point and literally radi-   |     | (C) Lamarck (D) Wallace   |
|                          | ating to other areas of geography (habitats) is called   | 70. | Fill in the blanks according to the convergent evolution.                       |
| (A) Adaptive convergence |  |     | Placental mammals Australian mammals  |
|                          | (B) Adaptive radiation   |     | Anteatera   |
|                          | (C) Natural selection  |     | b Spotted cuscus  |
|                          | (D) Convergent evolution   |     | Flying squirrelc  |
| 2.                       | Hugo de Vries works on the mutation in   |     | d Tasmanian tiger cat   |
|                          | (A) First decade of nineteenth century   |     |   |
|                          | (B) First decade of twentieth century (C) First decade of eighteenth century   |     | (A) c—flying phalanger, b—lemur, d—bobcat,<br>a—Numbat                          |
|                          | (D) Last decade of nineteenth century  |     | (B) b—flying phalanger, a—lemur, c—bobcat,                                      |
|                          | Original features of Darwin's finches in Galapagos is-   |     | d-Numbat  |
| <b>).</b>                | lands were adapted for   |     | (C) c—flying phalanger, a—lemur, d—bobcat,                                      |
|                          | (A) Flesh eating (B) Insect eating   |     | b—Numbat (D) d—flying phalanger, b—lemur, c—bobcat,                             |
|                          | (C) Fish eating (D) Seed eating  |     | a—Numbat  |
|                          | Which of the following pair is incorrectly matched with  | 71. | According to Darwin, evolution is   |
|                          | respect to convergent evolution?   |     | (A) Sudden but discontinuous process  |
|                          | (A) Lemur—Spotted cuscus   |     | (B) Slow, gradual, continuous process   |
|                          | <ul><li>(B) Flying squirrel—Flying phalanger</li><li>(C) Anteater—Numbat</li></ul>   |     | (C) Slow, sudden and discontinuous process                                      |
|                          | (D) Bobcat—Tasmanian lion cat  |     | (D) Slow and discontinuous process  |
|                          | Match the columns I and II, and choose the correct com-  | 72. | An evolutionary pattern characterised by a rapid increase                       |
|                          | bination from the options given.   |     | in number of kinds of closely related species is called (A) Divergent evolution |
|                          | The second secon |     | (B) Convergent evolution  |
|                          |  |     | (C) Adaptive radiation  |
|                          | a. Oparin 1. America   |     | (D) Parallel evolution  |
|                          | b. Haldane 2. France   | 73. | Naturalist who sailed round the world in ship Beagle was                        |
|                          | c. Miller 3. Russia  |     | (A) Charles Lyell (B) Charles Darwin (C) Alfred Wallace (D) Lamarck             |
|                          | d. Lamarck 4. England  |     | \-\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \   |
|                          | (A) a—1, b—2, c—3, d—4   | 74. | Darwin's finches occur in (A) Australia (B) Galapagos Islands                   |
|                          | (B) a-2, b-3, c-4, d-1   |     | (C) Siberia (D) India   |
|                          | (C) a-4, b-3, c-1, d-2<br>(D) a-3, b-4, c-1, d-2   | 75  | The three Control colories on fundamental approach of                           |
|                          | Theory of inheritance of acquired characters was given   | 75. | evolutionary changes was reached  |
|                          | by   |     | (A) By Charles Darwin in 1866   |
|                          | (A) Wallace (B) Lamarck  |     | (B) Alfred Russel Wallace in 1901   |
|                          | (C) Darwin (D) De Vries  |     | (C) Independently by Darwin and Russel in 1859                                  |
|                          | According to Darwin, diversity as found in Australian  |     | (D) Independently by Darwin and Russel in 1900.                                 |
|                          | marsupials is due to   | 76. | Which cannot be explained by Lamarckism?  (A) Loss of tail by humans            |
|                          | (A) Convergent evolution   |     | (B) Elongation of neck in Giraffe   |
|                          | (C) Weak progeny of a Nobel laur   |     | (C) Weak progeny of a Nobel laureate  |
|                          | (C) Parallel radiation   |     | (D) None of the above   |
| - 1                      | (D) Parallel evolution   |     | 78 277  |

- 77. Darwin in his "Natural Selection Theory" did not believe in any role of which one of the following?
  - (A) Parasites and predators as natural enemies
  - (B) Survival of the fittest
  - (C) Struggle for existence
  - (D) Discontinuous variations
- 78. Which one of the following sequences was proposed by Darwin and Wallace for organic evolution?
  - (A) Overproduction, variations, constancy of population size, natural selection
  - (B) Variations, constancy of population size, overproduction, natural selection
  - (C) Overproduction, constancy of population size, variations, natural selection
  - (D) Variations, natural selection, overproduction, constancy of population size
- 79. Darwin's theory state that
  - (A) Characters are acquired through inheritance
  - (B) Species change morphologically with time
  - (C) Nature selects organisms which can adapts
  - (D) Evolution is due to effect of environment
- 80. Recognise the figure and find out the correct matching.



- (A) c-wombat, b-koala, a-sugar glider, d-banded anteater
- (B) a-wombat, c-koala, d-sugar glider, b-banded anteater
- (C) b-wombat, d-koala, c-sugar glider, a-banded anteater
- (D) d-wombat, a-koala, b-sugar glider, c-banded anteater
- 81. What is true for Lamarck?
  - (A) American botanist who later became zoologist
  - (B) English naturalist who propounded theory of evolution

- (C) British scientist who gave law of genetic
- (D) French scientist who gave "Inheritances of Ac.
- 82. Tasmanian Wolf is a marsupial while Wolf is a place
  - (A) Convergent evolution
  - (B) Divergent evolution
  - (C) Parallelism
  - (D) Inheritance of acquired characters
- 83. Dark coloured Peppered Moth is able to survive in into trial areas as compared to light coloured form because

  - (B) Mimicry
  - (C) Natural selection in smoky environment
  - (D) Lethal mutation
- 84. Presence of different types of beaks in finches of Galage gos Islands adapted to different feeding habit provide evidence for
  - (A) Intraspecific variations
  - (B) Natural selection
  - (C) Intraspecific competition
  - (D) Interspecific competition
- 85. Which one provides correct sequence of events in original of new species according to Darwinism?
  - 1. Natural selection
  - 2. Variations and their inheritance
  - 3. Survival of the fittest
  - 4. Struggle for existence
  - (A) 1.2.3,4
- (B) 2, 3.1,4
- (C) 3,4, 1,2
- (D) 4, 2, 3, 1
- 86. The ship in which Darwin travelled was
  - (A) Baegle
- (B) Beagle
- (C) Beagel
- (D) Baegel
- 87. Darwin was most influenced by
  - (A) Lamarck's theory of acquired characters
  - (B) Weismann's theory of germplasm
  - (C) Wallace's theory of origin of species
  - (D) Essay on Population by Malthus
- 88. T.R. Malthus is famous for his book on
  - (A) Population
- (B) Mathematics
- (C) Geography
- (D) Genetics
- 89. Weismann cut of tail of mice generation after general but tail neither disappeared nor shortened showing the
  - (A) Darwin was correct
  - (B) Tail is an essential organ
  - (C) Mutation theory is wrong
  - (D) Lamarckism was wrong in inheritance of acquired characters
- 90. 'Origin of Species' was written by
  - (A) Oparin
- (B) Weismann
- (C) Lamarck
- (D) Darwin

91. 'Philosophic Zoologique' was written by

(A) De Vries

(B) Lamarck

(C) Mendel

(D) Spencer

92. Hugo de Vries worked on the plant

- (A) Garden Pea/Pisum sativum
- (B) Sweat Pea/Lathyrus odoratus
- (C) Primula sinensis
- (D) Evening Primrose/Oenothera lamarckiana

# 10PIC 4: Hardy—Weinberg Principle

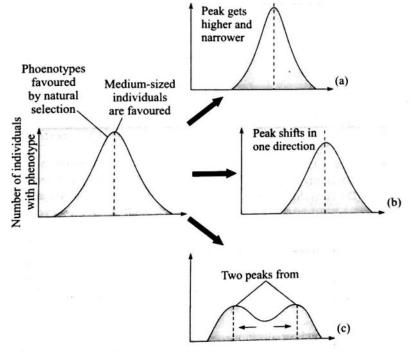
- 93. Choose the wrong statement regarding Hardy—Weinberg principle.
  - (A) Sum total of all the allelic frequencies in a population is 1.
  - (B) Variation due to genetic drift results in changed frequency of genes and alleles in future generations.
  - (C) Natural selection can lead to stabilisation, directional change or disruption.
  - (D) Genetic recombination helps in maintaining Hardy-Weinberg equilibrium.

- 94. During the growth of any population more individuals acquires peripheral character value at both ends of the distribution curve which lead to the
  - (A) Stabilisation
  - (B) Directional change
  - (C) Disruption
  - (D) Either B or C
- 95. In a population of 1000 individuals, 360 belong to genotype aa, 480 to Aa and remaining 160 to aa. Based on this data, the frequency of allele A in the population is
  - (A) 0.5

(B) 0.6

(C) 0.7

- (D) 0.4
- 96. 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
- 97. Recognise the figure and find out the correct matching.



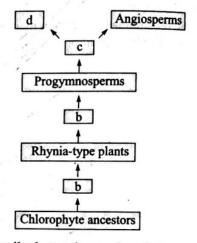
- (A) b-directional, a-disrupting, c-stabilising
- (B) b—directional, c—disrupting, a—stabilising
- (C) c—directional, b—disrupting, a—stabilising
- (D) a—directional, c—disrupting, b—stabilising
- 98. New species develop due to
  - (A) Isolation and mutation
  - (B) Competition and mutation
  - (C) Isolation and competition
  - (D) Isolation and variation

- 99. Which is most important for speciation?
  - (A) Seasonal isolation
  - (B) Reproductive isolation
  - (C) Temporal isolation
  - (D) Behavioural isolation
- 100. Some bacteria can grow in streptomycin containing medium due to
  - (A) Induced mutation
- (B) Natural selection
- (C) Reproductive isolation
- (D) Mimicry

- 101. Formation of new species from pre-existing ones is
  - (A) Mutation
- (B) Speciation
- (C) Isolation
- (D) Polyploidy
- 102. Speciation in geographically separated region is
  - (A) Sibling
- (B) Geopatric
- (C) Sympatric
- (D) Allopatric
- 103. In which condition gene ratio remains constant in a species?
  - (A) Gene flow
- (B) Mutation
- (C) Random mating
- (D) Sexual selection
- 104. In random mating population in equilibrium, which of the following brings about a change in gene frequency in a non-directional manner
  - (A) Mutations
- (B) Random drift
- (C) Selection
- (D) Migration
- 105. Change in frequency of alleles in population results in evolution as proposed by
  - (A) De Vries theory
  - (B) Hardy—Weinberg principle
  - (C) Darwin's theory
  - (D) Lamarck's theory
- 106. What is correct formulation of Hardy Weinberg law?
  - (A)  $p^2 + 2pq + q^2 = 1$
  - (B)  $p^2 + pq + q^2 = 1$
  - (C)  $p^2 + 2pq + q^2 = 0$
  - (D)  $p^2 + pq + q^2 = 0$
- 107. Hardy-Weinberg equilibrium is influenced by gene flow, genetic drift, mutation, genetic recombination and
  - (A) Evolution
- (B) Limiting factor
- (C) Over-production
- (D) Natural selection
- 108. Concept of genetic drift was introduced by
  - (A) Sewall Wright
- (B) Hardy Weinberg
- (C) Julian Huxley
- (D) G. G. Simpson
- 109. Hardy—Weinberg principle cannot operate if
  - (A) Population is large
  - (B) Free interbreeding among all members
  - (C) Frequent mutations occur in population
  - (D) Population does not interact with other population
- 110. Read the statements (i iv) and choose the correct option.
  - i. Increase in melanised moths after industrialization in Great Britain is a proof of Natural Selection
  - ii. More individuals acquiring mean character value cause disruption
  - iii. Change in allelic frequency leads to Hardy-Weinberg equilibrium
  - iv. Genetic drift changes allelic frequency in future generations
  - (A) ii is correct
- (B) i is correct
- (C) i and iv are correct
- (D) i and iii are correct

## **TOPIC 5: Evolution of Organisms**

- - (A) 350 mya
- (B) 320 mya
- (C) 500 mya
- (D) 200 mya
- 112. In ...a..., a fish caught in ...b..., happened to be a which was thought to be extinct. These animals are cally
  - (A) a—1891, b—South America, c—Ichthyosaurs, d
  - (B) a—1938, b—South America, c—Icthyophis, d coelacanth, e-reptiles
  - (C) a—1891, b—North America, c—coelacanth, d lobefins, e-amphibians
  - (D) a-1938, b-South Africa, c-coelacanth, dlobefins, e-amphibians
- 113. Recognise the figure and find out the correct matching



- (A) a—psilophyton, b—tracheophyte ancestors, c cycads, d-conifers
- (B) a-tracheophyte ancestors, b-psilophytons, cseed ferns, d-cycads
- (C) a-psilophyton, b-tracheophyte ancestors, cseed ferns, d-cycads
- (D) a-tracheophyte ancestors, b-psilophyton, ccycads, d-seed ferns
- 114. Which was the biggest land dinosaur?
  - (A) Protoceratops
- (B) Apatosaurus
- (C) Tyrannosaurus rex
- (D) Ichthyosaurus
- 115. Match the columns I and II, and choose the correct com bination from the options given.

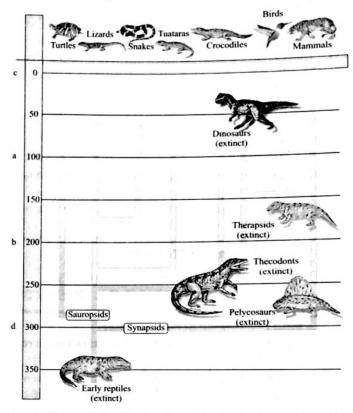
|    | Column I                         |    | Column  |
|----|----------------------------------|----|---------|
| a. | Invertebrates evolved            | 1. | 65 mya  |
| b. | Sea weeds and few plants evolved | 2. | 200 mya |
| c. | Jaw fishes evolved               | 3. | 320my8  |
| d. | Fish like reptiles evolved       | 4. | 350 mya |
| e. | Dinosaurs disappeared            | 5. | 500 mya |

- (A) a-3, b-5, c-4, d-1, e-2
- (B) a-4, b-3, c-5, d-2, e-1
- (C) a-5, b-4, c-3, d-1, e-2
- (D) a-5, b-3, c-4, d-2, e-1
- 116. In human being vestigial organs are (A) Wisdom tooth, coccyx, nail, eyelid and vermiform appendix
  - (B) Wisdom tooth, coccyx, vermiform appendix, pancreas and elbow joint
  - (C) Wisdom tooth, coccyx, vermiform appendix, nictitating membrane and auricular muscles
  - (D) Coccyx, wisdom tooth, nail, auricular muscles
- 117. Dinosaurs disappeared during
  - (A) Jurassic
- (B) Triassic
- (C) Cretaceous
- (D) Permian
- 118. A bird with teeth is
  - (A) Kiwi
- (B) Ostrich/King vulture
- (C) Dodo
- (D) Archaeoptervx
- 119. Correct order is
  - (A) Palaeozoic ......Archaeozoic ......Coenozoic
  - (B) Archaeozoic ......Palaeozoic ......Proterozoic
  - (C) Palaeozoic ......Mesozoic ......Coenozoic
  - (D) Mesozoic ......Archaeozoic ......Proterozoic
- 120. Age of mammals and birds is
  - (A) Mesozoic
- (B) Coenozoic
- (C) Archaeozoic
- (D) Palaeozoic

#### TOPIC 6: Origin and Evolution of Man

- 121. Homo sapiens a rise in
  - (A) Africa
  - (B) Ethiopia and Tanzania
  - (C) South American grasslands
  - (D) Central and East Asia
- 122. Extinct human ancestor who ate only fruits and hunted with stone weapons was
  - (A) Australopithecus
- (B) Dryopithecus
- (C) Ramapithecus
- (D) Homo erectus
- 123. The hominid fossils discovered in Java in 1891 revealed a stage in human evolution which was called
  - (A) Homo erectus
- (B) Dryopithecus
- (C) Australopithecus
- (D) Homo habilis
- 124. Fossil man having cranial capacity similar to that of modern man was
  - (A) Australopithecus
- (B) Java Ape Man
- (C) Neanderthal Man
- (D) Peking Man
- 125. Which one of the following was the first to stand erect/ show bipedal movement?
  - (A) Peking Man
- (B) Australopithecus
- (C) Java Man
- (D) Cro-Magnon Man

126. Here is given the diagrammatic representation of evolutionary history of vertebrates through geological periods. Identify the geological periods (a, b, c and d) and select the correct option.



- (A) a—Carboniferous, b—Triassic, c—Cretaceous, d— Ouaternary
- (B) a-Jurassic, b-Permian, c-Tertiary, d-Carboniferous
- (C) a-Permian, b-Jurassic, c-Quaternary, d-Ter-
- (D) a—Cretaceous, b—Quaternary, c—Carboniferous, d-Jurassic
- 127. Fossil man expert in making cave paintings and tools was
  - (A) Cro-Magnon Man
- (B) Peking Man
- (C) Java Man
- (D) Neanderthal Man
- 128. Maximum resemblance of today's man is with
  - (A) Australopithecus
- (B) Cro-Magnon Man
- (C) Java Man
- (D) Neanderthal Man
- 129. Cranial capacity of Neanderthal Man was
  - (A) 1400 cc
- (B) 1300 cc
- (C) 1200 cc
- (D) 1100 cc
- 130. Which is the most primitive ancestor of man?
  - (A) Ramapithecus
  - (B) Australopithecus
  - (C) Homo habilis
  - (D) Homo neanderthalensis

|      | eranial capacity of mamans   | 3  |      | (0)   |  |
|------|--|--|------|---|--|
|      | (A) 915 cc   | (B) 1450 cc  |      | Man, Hoco erectus, Modern Man   |  |
|      | (C) 1600 cc  | (D) 1700 cc  |      | (D) Homo erectus, Australopithecus, Neanderthal Man   |  |
| 132. | Primitive Man who built up dead was  | dwelling huts and buried its                                     |      | Cro-Magnon Man, Modern Man  |  |
|      | (A) Java Ape Man (C) Peking Man  | <ul><li>(B) Cro-Magnon Man</li><li>(D) Neanderthal Man</li></ul> | 136. | <ul> <li>Which is correct order of increasing geological time scal<br/>for a hypothetical vertebrate evolution?</li> <li>(A) Cenozoic, mesozoic, palaeozoic, precambrian</li> </ul> |  |
| 133. | The continent where maximulave been found is   | ım fossils of prehistoric man                                    |      | (B) Cenozoic, palaeozoic, mesozoic, precambrian (C) Precambrian, cenozoic, palaeozoic, mesozoic   |  |
|      | (A) Asia<br>(C) Europe   | (B) Africa<br>(D) America  |      | (D) Precambrian, palaeozoic, mesozoic, cenozoic.  |  |
| 134. | Which one is connected with (A) Binocular vision (C) Loss of tail  | human evolution? (B) Flatnails (C) Shortening of jaws            | 137. | (A) 1650 cc (B) 1400 cc (C) 900 (D) 650 cc  |  |
| 135. | Correct sequence of stages in evolution of Modern Man/<br>Homo sapiens sapiens is<br>(A) Australopithecus, Neanderthal Man, Cro-Magnon |  | 138. | Scientific name of Java man is  (A) Homo habilis  (B) Homo sapiens neanderthalensis   |  |
|      | Man, Homo erectus, Mo  | dern Man<br>erectus, Neanderthal Man,                            |      | (C) Homo erectus erectus (D) Australopithecus boisei  |  |

131. Cranial capacity of humans is

Cro-Magnon Man, Modern Man

(C) Neanderthal Man, Australopithecus, Cro-Magnon