Topic 1

Origin of Life and Evolution of Life Forms

1. Evolutionary biology is
   (a) the study of history of life forms on earth
   (b) study of pedigrees of life forms on earth
   (c) equivalent to demography
   (d) equivalent to anthropology

2. Which of the following statement about orgin of life is incorrect?
   (a) The universe is almost 20 billion years old
   (b) Big Bang theory explained that universe originated by a huge explosion
   (c) Present day galaxies are formed by the condensation of hydrogen and helium under gravitational pull
   (d) None of the above

3. Identify the correct statement.
   (a) Earth was formed about 4.5 billion years ago
   (b) Early earth had no atmosphere
   (c) The temperature of universe came down due to its expansion
   (d) All of the above

4. According to one of the most widely accepted theories, earth's atmosphere before origin of life consisted of a mixture of
   (a) O_3, CH_4, O_2 and H_2O
   (b) O_3, NH_3, CH_4 and H_2O
   (c) H_2, CO_2, NH_3 and CH_4
   (d) CH_4, NH_3, H_2 and H_2O vapours

5. The ...*A*... from the sun broke up water into hydrogen and oxygen and the ...*B*... escaped. Oxygen combined with ammonia and methane to form ...*C*..., . CO_2 and others. The ozone layer was formed. As it cooled, the water vapours fell as rain, to fill all the depressions and form ...*D*... .
   Choose the correct option for *A*, *B*, *C* and *D* to complete the given paragraph.
   (a) A–IR rays, B–lighter H_2, C–water D–oceans
   (b) A–UV rays, B–lighter H_2, C–water D–oceans
   (c) A–UV rays, B–heavier H_2, C–water D–oceans
   (d) A–UV rays, B–heavier H_2, C–water D–oceans

6. Which theory arguments that life on earth came from outer space?
   (a) Theory of panspermia
   (b) Cosmozoic theory
   (c) Spore theory
   (d) More than one option are correct

7. For a long time it was believed that life came out of decaying and rotting matter like straw mud, etc. This was the theory of
(a) catastrophism (b) spontaneous generation
(c) panspermia (d) chemogeny

8. Who discarded the theory of spontaneous generation forever?
(a) Louis Pasteur (b) Francisco Redi
(c) Spallanzani (d) Aristotle

9. Who proposed that the first form of life could have come from pre-existing non-living organic molecules?
(a) SL Miller (b) Oparin and Haldane
(c) Charles Darwin (d) Alfred Wallace

10. What happened to NH_3 present in the primary atmosphere during its conversion to the secondary atmosphere?
(a) It got oxidised to H_2 and water
(b) It was absorbed by photoautotrophs
(c) Most of it got oxidised to nitrogen oxides
(d) Its concentration was decreased due to O_2 formation

11. Experimental evidence of chemical evolution was given by
(a) Miller (b) Haldane
(c) Oparin (d) All of these

12. Miller synthesised simple amino acids from one of the following mixtures in his experiment
(a) CH_4, NH_3, H_2 and water vapours
(b) H_2, O_2, N_2 and water vapours
(c) H_2, O_2, C_2 and water vapours
(d) CH_4, NH_3, O_2 and water vapours

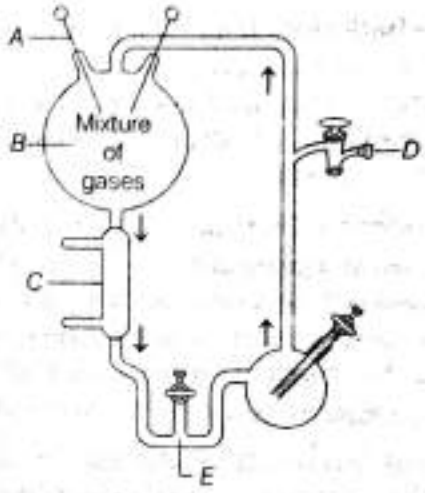
13. What did Miller obtained from his experiment?
(a) Amino acid
(b) Organic compounds
(c) Peptide
(d) All of the above

14. On early earth, organic acids were produced by the combination of H_2 with
(a) ammonia and methane (b) hydrogen
(c) organic matter (d) sulphates and nitrates

15. Information molecule that most likely evolved first on the primitive earth was
(a) protein (b) DNA
(c) RNA (d) All of these

16. The first cell like structure initially appeared in
(a) air (b) mountain
(c) ocean (d) soil

17. The given diagram represents Miller's experiment. Choose the correct combination of labelling for *A, B, C, D* and *E*.



(a) A–Electrodes, B–NH_3 + H_2 + H_2O + CH_4, C–Cold water, D–Vacuum, E–U-trap
(b) A–Electrodes, B–NH_4 + H_2 + CO_2 + CH_3, C–Hot water, D–Vacuum, E–U-trap
(c) A–Electrodes, B–NH_3 + H_2O, C–Steam, D–U-trap, E–Vacuum
(d) A–Electrodes, B–NH_3 + H_2 + H_2O + CH_4, C–Steam, D–Vacuum, E–U-trap

18. What was the name of the sail ship used by Charles Darwin during his sea Voyage?
(a) HMS Beagle (b) HSM Beagle
(c) HMS Eagle (d) HSM Eagle

19. Evolution is
(a) discontinuous process
(b) stochastic process
(c) Both (a) and (b)
(d) non-essential process

20. Fitness according to Darwin refers to
(a) reproductive fitness (b) physiological fitness
(c) spiritual fitness (d) None of these

21. Theory of natural selection was given by
(a) Lamarck (b) Darwin
(c) Alfred Wallace (d) JBS Haldane

22. Scientist who also came to the similar conclusions around the same time of Charles Darwin was
(a) Alfred Wallace (b) Hugo de Vries
(c) TH Morgan (d) Oparin and Haldane

23. Malay Archipelago stands for
(a) a group of islands visited by Wallace
(b) research paper on evolution written by Wallace
(c) research paper on ecology written by Wallace
(d) a group of organism studied by Wallace

Evidences for Evolution

24. Evidence that evolution of life forms has indeed taken place on earth has come from
(a) fossil studies (palaeontological evidences)
(b) morphological and comparative anatomical study
(c) biochemical study
(d) All of the above

25. Fossils are the remains of
(a) hard part of life forms found in rocks
(b) light part of life forms found in rocks
(c) protein and bones of life forms found in rocks
(d) fat and protein of life forms found in rocks

26. A study of fossils in different sedimentary layers indicates
(a) physiological period in which they existed
(b) geological period in which they existed
(c) conditions in which they were living
(d) All of the above

27. Fossils are useful in
(a) studying extinct organisms
(b) studying history of organisms
(c) Both (a) and (b)
(d) None of the above

28. Which one of the following options gives one correct example each of convergent evolution and divergent evolution? **(CBSE AIPMT 2012)**

	Convergent evolution	Divergent evolution
(a)	Eyes of *Octopus* and mammals	Bones of forelimbs of vertebrates
(b)	Thorns of *Bougainvillea* and tendrils of *Cucurbita*	Wings of butterflies and birds
(c)	Bones of forelimbs of vertebrates	Wings of butterfly and birds
(d)	Thorns of *Bougainvillea* and tendrils of *Cucurbita*	Eyes of *Octopus* and mammals

29. In the animals, the same structures developed along the different directions due to the adaptations to different needs. This is called
(a) convergent evolution
(b) divergent evolution
(c) disruptive evolution
(d) directional evolution

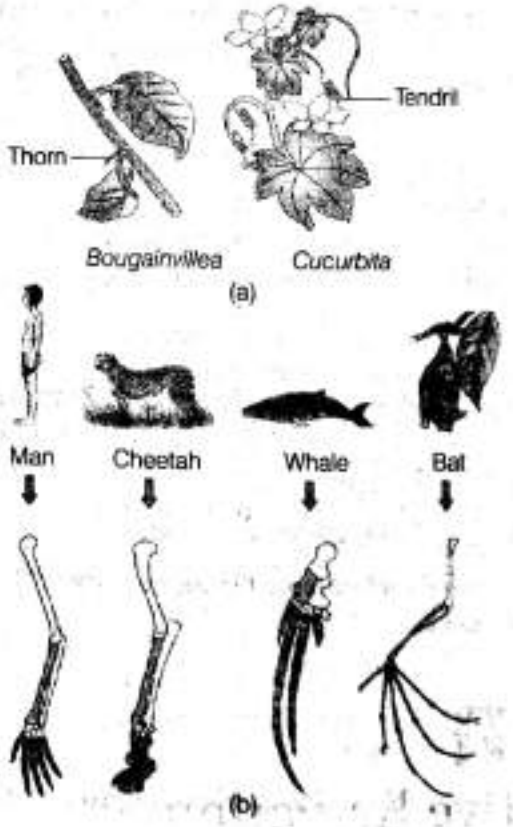
30. Divergent evolution gives rise to
(a) homologous organs
(b) analogous organs
(c) Both (a) and (b)
(d) None of these

31. What do presence of homologous organs in different animals indicate?
(a) Different ancestry (b) Common ancestry
(c) Independent development (d) Dependent development

32. Tendril of *Cucurbita* and thorns of *Bougainvillea* are examples of
(a) vestigial organs (b) analogous organs
(c) homologous organs (d) homoplasy

33. Which of the following structures is homologous to the wing of a bird? **(CBSE AIPMT 2015)**
(a) Wing of a moth (b) Hindlimb of rabbit
(c) Flipper of whale (d) Dorsal fin of a shark

34. Diagram given below indicates



(a) analogous organs (b) homologous organs
(c) convergent evolution (d) All of these

35. The wings of a bird and the wings of an insect are **(CBSE AIPMT 201**
(a) homologous structures and represent divergent evolutio
(b) analogous structures and represent convergent evolutio
(c) phylogenetic structures and represent divergent evolution
(d) homologous structures and represent convergent evolution

36. The eyes of *Octopus* and eyes of cat show different patterns of structure, yet they perform similar function. This is an example of **(NEET 2013)**
(a) homologous organs that have evolved due to convergent evolution
(b) homologous organs that have evolved due to divergent evolution
(c) analogous organs that have evolved due to convergent evolution
(d) analogous organs that have evolved due to divergent evolution

37. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called **(NEET 2013)**
(a) natural selection (b) convergent evolution
(c) non-random evolution (d) adaptive radiation

38. Evolutionary convergence is the development of
(a) common set of characters in closely related groups
(b) common set of characters in the group of different ancestry
(c) random mating
(d) dissimilar characters in the closely related groups

39. Biochemical similarities are based on study of
(a) similarities in carbohydrates of organisms
(b) similarities in fat (fatty acid) of organisms
(c) similarities in protein and genes of organisms
(d) All of the above

40. Change of lighter coloured variety of peppered moths *(Biston betularia)* to darker variety in the industrial era occurred due to
(a) selection of darker variety for survival
(b) deletion of gene
(c) industrial carbon deposited on the wings
(d) translocation of gene

41. England in 1850s, i.e., before industrialisation set in, it was observed that there were more white-winged moths on trees than dark-winged or melanised moths. However, in the collection carried out from the same area, but after industrialisation, i.e. in 1920, there were more dark-winged moths in the same area, i.e. the proportion was reversed.
Predict the possible reason for such change.
(a) Natural selection
(b) Artificial selection
(c) Conditional selection
(d) Divergent selection

42. Natural indicator of industrial pollution is
(a) algae (b) fungi
(c) lichen (d) bacteria

43. Example justifying that anthropogenic actions lead to evolution is the use of which of the following on large scale?
(a) Herbicides (b) Pesticides
(c) Antibiotics (d) All of these

44. Industrial melanism is an example of **(CBSE AIPMT 2015)**
(a) neo Darwinism
(b) natural selection
(c) mutation
(d) neo Lamarckism

45. Industrial melanism as observed in peppered moth proves that
(a) the melanic form of the moth has no selective advantage over lighter form in industrial area
(b) the lighter-form moth has no selective advantage either in polluted industrial area or non-polluted area
(c) melanism is a pollution-generated feature
(d) the true black melanic forms arose by a recurring random mutation

Topic 3
Adaptive Radiation

46. Development of different functional structures from a common ancestral form is called
(a) differential evolution (b) adaptive radiation
(c) non-adaptive radiation (d) regressive evolution

47. The process by which different type of finches were evolved in Galapagos islands is a consequence of
(a) adaptive radiation
(b) geographic similarity
(c) geographic dissimilarity
(d) adaptive convergence

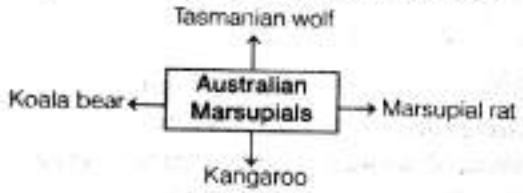
48. Which one of the following aspect of evolution is shown by Darwin's finches?
(a) Biogeographic evidence (b) Industrial melanism
(c) Biochemical evidence (d) Embryological evidence

49. The diversity in the type of finches and adaptation to different feeding habits on the Galapagos islands, as observed by Darwin, provides an evidence of
(a) origin of species by natural selection
(b) intraspecific variation
(c) intraspecific competition
(d) interspecific competition

50. Development of similar adaptive functional structural features in an unrelated group of organism is called
(a) adaptive radiation (b) adaptive convergence
(c) Both (a) and (b) (d) evolution

51. Australian marsupials are the example of
(a) homologous radiation (b) analogous radiation
(c) adaptive radiation (d) convergent radiation

52. Identify what the given diagram indicates?



(a) Convergent evolution (b) Divergent evolution
(c) Recapitulation (d) Parallel evolution

53. Which of the following is not an examples of adaptive radiation?
(a) Wombat, numbat, flying phalanges
(b) Darwin's finches
(c) Different mammals in other parts of world
(d) Lemur and spotted cuscus

54. Example of convergent evolution is
(a) Darwin finches and marsupial mouse
(b) Placental wolf and Tasmanian wolf
(c) Placental wolf and Darwin finches
(d) Tasmanian wolf and marsupial mole

55. The classical example of adaptive radiation in development of new species is
(a) Darwin's finches
(b) marsupials of Australia
(c) locomotion in mammals
(d) All of the above

Topic 4
Biological Evolution and Its Mechanism

56. Which concept was not included in Charles Darwin's theory of natural selection?
(a) Survival of the fittest
(b) Struggle for existence
(c) Over production of offspring
(d) Punctated equilibrium

57. What's the difference between natural selection and sexual selection?
(a) Sexual selection occurs during sexual intercourse
(b) Natural selection is a type of sexual selection
(c) Sexual selection is an example of natural selection
(d) Sexual selection occurs within demes

58. What is meant by the term 'Darwin fitness'?
(a) The ability to survive and reproduce
(b) High aggressiveness
(c) Healthy appearance
(d) Physical strength

59. Survival of the fittest is possible due to
(a) over production
(b) favourable variations
(c) environmental change
(d) inheritance of acquired characters

60. Which of the following situation would most likely result in the highest rate of natural selection?
(a) Reproduction by asexual method
(b) Low mutation is an stable environment
(c) Little competition
(d) Reproduction by sexual method

61. According to Darwin, the organic evolution is due to (NEET 2013)
(a) intraspecific competition
(b) interspecific competition
(c) competition within closely related species
(d) reduced feeding efficiency in one species due to the presence of interfering species

62. Darwinian fitness can be estimated by
(a) how long different individual in a population survive
(b) number of offsprings produced by different individuals in population
(c) individual have a large size in population
(d) species recover after mass extinction

63. Which one of the following was not explained by Darwinism?
(a) Natural selection (b) Struggle for existence
(c) Arrival of the fittest (d) Origin of species

64. Which of the following factor was not taken into account by Darwin in his theory of natural selection?
(a) Struggle for existence
(b) Discontinuous variations
(c) Parasites and predators as natural enemies
(d) Survival of the fittest

65. Which one of the following statements is true regarding the theory of natural selection?
(a) It was the first theory of organic evolution
(b) It does explains information derived from fossils
(c) It has failed to explain the origin of variations
(d) It has succesfully explained concept of speciation

66. Which of the following are the two key concepts of Darwinian theory of evolution?
(a) Genetic drift and mutation
(b) Adaptive radiation and homology
(c) Mutation and natural selection
(d) Branching descent and natural selection

67. Lamarck's theory of evolution is also known as
(a) theory of use and disuse of organs
(b) theory of genetic characters
(c) theory of spontaneous characters
(d) theory of impose characters

68. What was the Lamarck's explanation for long necked giraffes?
(a) Stretching of necks over many generations
(b) Short neck suddenly changed into long one
(c) Natural selection
(d) Mutation

69. Which of the following differences between Lamarckism and Darwinism is incorrect?

	Lamarckism	Darwinism
(a)	It does not consider struggle for existence	Struggle for existence is very important in this theory
(b)	Only useful variations are transferred to the next generation	All the acquired characters are inherited to the next generation
(c)	Neglects survival of the fittest	Based on survival of the fittest
(d)	None of the above	

70. Who proposed the concept of saltation?
(a) Darwin
(b) Mendel
(c) de Vries
(d) Thomas Malthus

71. What does the term 'Saltation' imply?
(a) Excess of species at a given area
(b) Reduced number of species due to saline environment
(c) Occurrance of variations gradually, step by step
(d) Single step large mutations

72. Which of the following statements would Darwinism most likely disagree with?
(a) Individuals within a population vary in the characteristics they possess
(b) Evolution is best viewed as a purpose less and non-directional change over time
(c) Natural selection is the mechanism by which biological evolution takes place
(d) The fossil record supports the view that biological evolution has occurred

Topic 5
Mechanism of Evolution and a Brief Account of Evolution

73. Hardy-Weinberg principle is the
(a) stable allele frequency in a population
(b) genetic structure of an evolving population
(c) varying allele frequency in a population
(d) phenotypic structure of a non-evolving population

74. Genetic equilibrium refers to phenomenon that
(a) the traits remains constant in a population
(b) the total genes remain constant in a population
(c) the total genes keeps on varying in a population
(d) traits keeps on varying in a population

75. Hardy-Weinberg principle can be expressed as
(a) $p^2 + 3pq + q^2 = 1$ (b) $p^2 + 2pq + q^2 \geq 1$
(c) $p^2 + 2pq + q^2 \leq 1$ (d) $p^2 + 2pq + q^2 = 1$

76. Which of the following frequency was described by Hardy-Weinberg for an entire population?
(a) Genes (b) Genotype
(c) Phenotype (d) Allele

77. In Hardy-Weinberg law the homozygous dominant alleles (I), homozygous recessive alleles (II) and heterozygous alleles (III), are represented by

	I	II	III		I	II	III
(a)	p^2	q^2	$3pq$	(b)	p^2	q^2	$2pq$
(c)	a^2	p^2	$2pq$	(d)	q^2	$2pq$	p^2

78. Which of the following conditions represents the extent of evolutionary change in Hardy-Weinberg principle?
(a) Value of $(p+q)^2$
(b) Difference between measured value and expected value
(c) Sum of measured value and expected value
(d) This principle can't predict the extent of evolutionary change

79. In Hardy-Weinberg equation, the frequency of heterozygous individual is represented by **(CBSE AIPMT 2015)**
(a) p^2 (b) $2pq$ (c) pq (d) q^2

80. The tendency of population to remain in genetic equilibrium may be disturbed by **(NEET 2013)**
(a) random mating
(b) lack of migration
(c) lack of mutations
(d) lack of random mating

81. Identify the phenomenon in which a new set of population is formed from the set of existing population due to the random excessive change in the allele frequency.
(a) Founder effect
(b) Genetic drift
(c) Bottle-neck effect
(d) All of the above

82. Genetic drift operates in **(CBSE AIPMT 2015)**
(a) small isolated population
(b) large isolated population
(c) non-reproductive population
(d) slow reproductive population

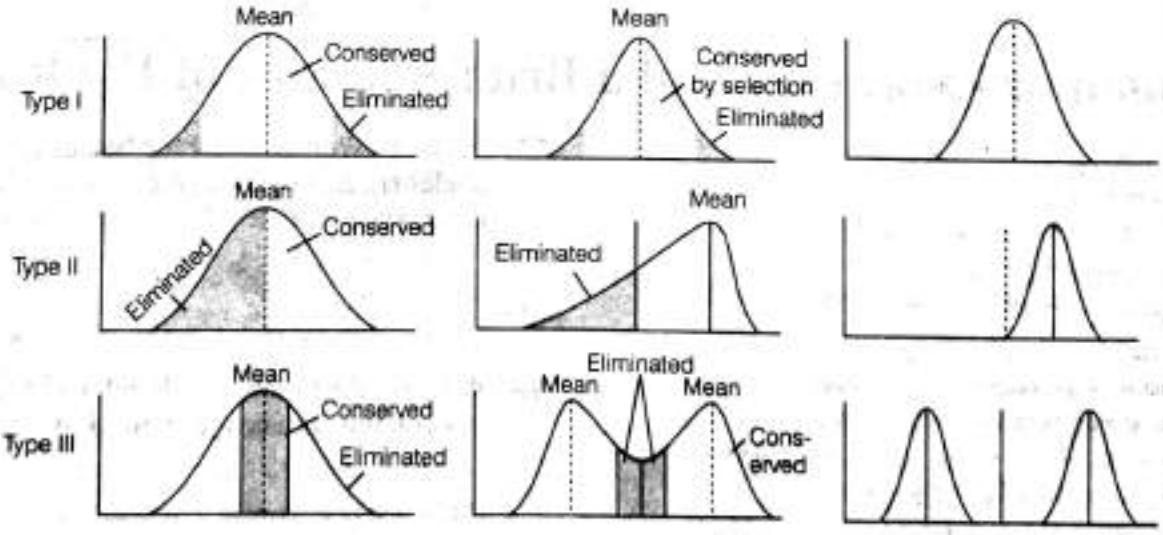
83. Identify the incorrect statement.
(a) In natural selection heritable variations enable better survival
(b) Variations due to gene flow changes allele frequency in future generation
(c) Gene flow occurs due to multiple gene migration
(d) None of the above

84. Natural selection can lead to ...*A*... (in which more individuals acquire mean character value), ...*B*... (more individuals acquire value other than the mean character value) and ...*C*... (in which more individuals acquire peripheral character value at both ends of the distribution curve).
Choose the correct options for *A*, *B* and *C*.
(a) A–directional changes, B–stabilising, C–disruption
(b) A–stabilisation, B–directional changes, C–disruption
(c) A–stabilisation, B–disruption, C–directional changes
(d) A–disruption, B–directional changes, C–stabilising

85. 'XX' is a type of selection process in evolution that promotes the population changes in one particular direction 'XX' favours small or large sized individuals mean size of population changes. Identify 'XX'.
(a) Stabilising selection (b) Directional selection
(c) Disruptive selection (d) None of these

86. 'PP' is a type of selection that favours both small sized and large-sized individual. 'PP' eliminates most of the members with mean expression, so as to produce two peak in the distribution of the tract that many lead to the development of two different populations. Identify 'PP'.
(a) Disruptive selection (b) Stabilising selection
(c) Directional selection (d) None of these

87. Name the type of natural selection depicted in the given diagram (type I, type II and type III).



	Type I	Type II	Type III		Type I	Type II	Type III
(a)	Disruptive	Directional	Stabilising	(b)	Directional	Disruptive	Stabilising
(c)	Stabilising	Directional	Disruptive	(d)	Stabilising	Disruptive	Directional

88. Choose the incorrect pair.
(a) Invertebrates were famed and active – By 500 mya
(b) Seaweeds existed – Around 320 mya
(c) First organisms that invaded land – Single celled animals
(d) Fish with stout and strong fins – Around 350 mya

89. Name the animal that evolved into the first probable amphibians and lived on both land and water.
(a) Whale (b) Coelacanth
(c) Amphioxus (d) *Balanoglossus*

90. In which epoch, only modern humans prevails?
(a) Pleiostocene (b) Holocene
(c) Pliocene (d) Miocene

91. There was no life in
(a) Cenozoic era (b) Mesozoic era
(c) Palaeozoic era (d) Azoic era

92. Which period in geological time scale is considered the golden era of fish?
(a) Mississippian (b) Silurian
(c) Devonian (d) Jurassic

93. Giant dinosaurs and reptiles predominated during the Jurassic period. This period was also marked for the evolution of higher insects and angiosperms, conifers, cycads, etc. Jurassic period belongs to which era?
(a) Cenozoic (b) Palaeozoic
(c) Mesozoic (d) Proterozoic

94. During which period did the first seed plant appear?
(a) Silurian (b) Devonian
(c) Carboniferous (d) Cretaceous

95. The Cenozoic era is often designated as
(a) age of fish
(b) age of reptiles
(c) age of mammals
(d) age of amphibians

96. In which era Protozoa, sponge and algae originate?
(a) Cenozoic era
(b) Azoic era
(c) Proterozoic era
(d) Mesozoic era

97. Which of the following is an extinct animal?
(a) *Protopterus* (b) *Equus*
(c) *Archaeopteryx* (d) *Columba*

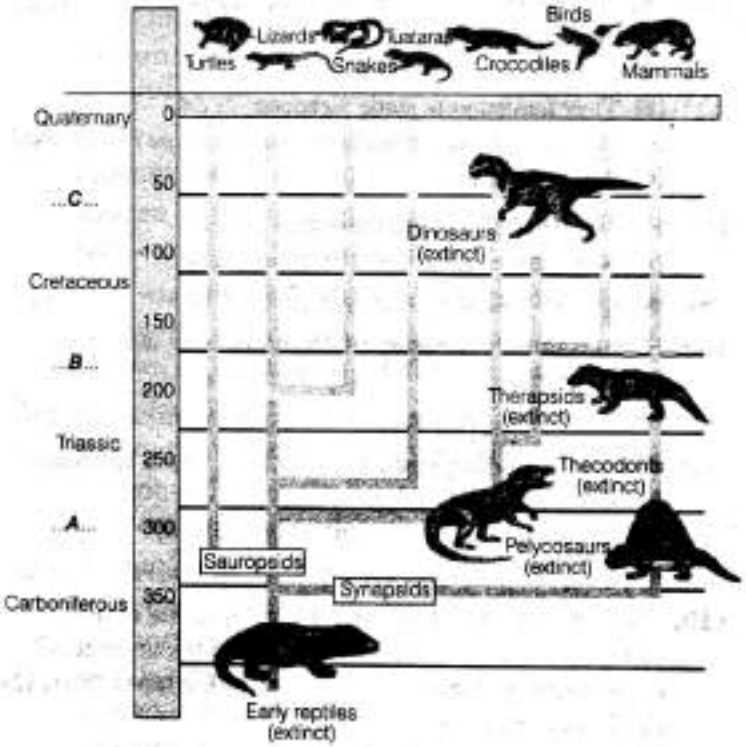
98. Mesozoic era is called the age of
(a) fishes (b) amphibians
(c) reptiles (d) birds

99. The most recent era in geological time scale is
(a) Mesozoic (b) Cenozoic
(c) Palaeozoic (d) Proterozoic

100. Correct order of evolutionary scale is
(a) Palaeozoic → Archaeozoic → Cenozoic
(b) Archaeozoic → Palaeozoic → Proterozoic
(c) Palaeozoic → Mesozoic → Cenozoic
(d) Mesozoic → Archaeozoic → Proterozoic

101. First dinosaurs and first egg-laying mammals were originated in
(a) Jurassic period (b) Triassic period
(c) Permian period (d) Cambrian period

102. Identify the geographical periods (*A*, *B*, *C*) in the given diagram.



(a) A–Tertiary, B–Jurassic, C–Permian
(b) A–Tertiary, B–Permian, C–Jurassic
(c) A–Permian, B–Jurassic, C–Tertiary
(d) A–Jurassic, B–Tertiary, C–Permian

103. The first mammals were like ...*A*... . Their fossils are small sized. Mammals were ...*B*... and protected their unborn young inside the mother's body.
Choose the correct option for *A* and *B* to complete the given statement.
(a) A–shrews, B–viviparous
(b) A–monkeys, B–viviparous
(c) A–monkeys, B–oviparous
(d) A–shrews, B–oviparous

104. Which phenomena confined the pouched mammals to Australia they survived because of lack of competition from any other mammals?
(a) Continental origination (b) Continental shifting
(c) Continental drift (d) Continental evolution

Topic 6

Origin and Evolution of Man

105. Choose the incorrect pair.
(a) *Ramapithecus* – Man-like
(b) *Dryopithecus* – Ape-like
(c) Fossil of man-like bones were discovered – Ethopia and Tanzania
(d) *Australopithecus* – Probably lived in Western Africa desert

106. Which one of the following statements is/are correct about *Australopithecus*?
(a) They essentially ate fruits
(b) They hunted with stone weapons
(c) They were transitional stage between ape and humans
(d) All of the above

107. First human like hominid is known as
(a) Neanderthal man (b) *Homo habilis*
(c) *Dryopithecus* (d) *Homo erectus*

108. Brain (cranial) capacity of *Homo habilis* was
(a) 750-850 cc (b) 750-800 cc
(c) 650-700 cc (d) 550-700 cc

109. The fossil finding suggest that closet fossil to *Homo habilis* was
(a) *Homo erectus* (b) *Homo sapiens*
(c) *Dryopithecus* (d) Neanderthal man

110. What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors? **(CBSE AIPMT 2011, 12)**
(a) Shortening of jaws
(b) Binocular vision
(c) Increasing brain capacity
(d) Upright posture

111. The extinct human who lived 100000 to 40000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eye brows, retreating fore heads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was **(CBSE AIPMT 2012)**
(a) *Homo habilis* (b) Neanderthal human
(c) Cro-magnon humans (d) *Ramapithecus*

112. *Homo sapiens* most likely arose in
(a) India (b) America
(c) England (d) Africa

113. *Homo sapiens* arose during
(a) ice-age between 75000-10000 years ago
(b) continental drift between 75000-10000 years ago
(c) continental drift between 75000-5000 years ago
(d) ice-age between 50000-10000 years ago

114. What was the most significant trend in the evolution of modern man (*Homo sapiens*) from his ancestors?
(a) Shortening of jaws (b) Binocular vision
(c) Increased brain capacity (d) Upright posture

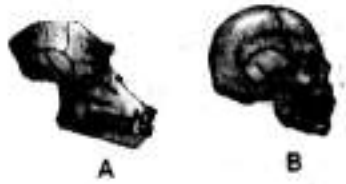
115. *Homo sapiens neanderthalensis* and Cro-magnon man, probably originated from
(a) *Homo erectus* (b) *Homo habilis*
(c) *Ramapithecus* (d) *Proconsul*

116. The difference between *Homo sapiens* and the *Homo erectus* was
(a) *Homo sapiens* originated in Africa, while *Homo erectus* originated in Asia
(b) *Homo erectus* were much smaller in size than *Homo sapiens*
(c) *Homo erectus* stayed in Africa, while *Homo sapiens* did not
(d) the size of the brain of *Homo erectus* was smaller than that of *Homo sapiens*

117. 'XX' lived 100000-40000 years ago, in Europe, Asia and Africa. 'XX' was short stature, hairy eyebrows, sctreating forehead and large jaws. Identify 'XX'.
(a) Neanderthal man (b) *Homo habilis*
(c) Cro-magnon man (d) *Dryopithecus*

118. 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*

119. The diagram given here shows the skull of two different mammals. Choose the most appropriate difference between *A* and *B*.



(a) Skull A has more teeth than skull B
(b) Skull A has more brain capacity than skull B
(c) Skull A is of a human and skull B is of an ape
(d) Skull A is of an ape and skull B is of human

Special Format Questions

I. Assertion and Reason

■ **Direction** (Q. No. 120-134) *In each of the following questions, a statement of Assertion (A) is given followed by corresponding statement of Reason(R). Of the statements, mark the correct answer as*

(a) Both A and R are true and R is the correct explanation of A

(b) Both A and R are true, but R is not the correct explanation of A

(c) A is true, but R is false

(d) A is false, but R is true

120. Assertion (A) Theory of chemical evolution proposed that life come from pre-existing non-living organic molecules.

Reason (R) The primitive earth conditions led to production of organic molecules.

121. Assertion (A) The theory of special creation states that diversity was always the same since creation.

Reason (R) The species on present day earth were created as such.

122. Assertion (A) Earth is billions of years old.

Reason (R) This inference has been established by radioisotope dating methods.

123. Assertion (A) Earliest organisms that appeared on the Earth were non-green and presumably anaerobes.

Reason (R) The first autotrophic organisms were the chemoautotrophs that never released oxygen.

124. Assertion (A) Microspheres are believed to be the precursors of life.

Reason (R) Microspheres are self-duplicating aggregates of proteins surrounded by lipid bilayer.

125. Assertion (A) Animals adopt different strategies to survive in hostile environment.

Reason (R) Praying mantis is green in colour, which allows it to merge with plant foliage.

126. Assertion (A) Natural selection is an outcome of the differences in survival and reproduction among individuals that shows variations in one or more traits.

Reason (R) Adaptive forms of a given trait tend to become more common. Less adaptive ones becomes less common or disappear.

127. Assertion (A) Whales and mammals share similarities in the pattern of bones of forelimbs.

Reason (R) These organisms developed along different directions due to adaptions to different needs.

128. Assertion (A) Analogous structures are different in appearance having same function.

Reason (R) Divergent evolution leads to analogy.

129. Assertion (A) Lichens act as pollution indicators.

Reason (R) Lichens will not grow in areas that are polluted.

130. Assertion Adaptive ability is inherited from generation to generation.

Reason (R) Some organisms are better adapted to survive in an hositle environment.

131. Assertion (A) Hugo de Vries said mutations cause speciation.

Reason (R) Mutations are slow changes.

132. Assertion (A) Allele frequencies in a population are stable and is constant from generation to generation.

Reason (R) In Hardy-Weinberg principle the gene pool remains constant.

133. Assertion (A) Human ancestors never used their tails therefore, the tail expressing gene were disappeared in modern humans.

Reason (R) Lamarck's theory of evolution is popularly called the theory of continuity of germplasm.

134. Assertion (A) Among the primates, chimpanzee is the closest relative of the present day humans.

Reason (R) The banding pattern in the autosome number 3 and 6 of man and chimpanzee is remarkably similar.

II. Statement Based Questions

135. Which of the following is the correct sequence of events in the origin of life? **(NEET 2016)**

I. Formation of protobionts.

II. Synthesis of organic monomers.

III. Synthesis of organic polymers.

IV. Formation of DNA-based genetic systems.

(a) I, II, III and IV (b) I, III, II and IV

(c) II, III, I and IV (d) II, III, IV and I

136. Which of the following statements are correct about the characteristics of protobionts, like microspheres as envisaged in the abiogenic origin of life?

I. They were able to reproduce.
II. They could separate the combinations of molecules from the surroundings.
III. They were partially isolated from the surroundings.
IV. They could maintain an internal environment absolutely.

Choose the correct option.

(a) I and II (b) II and III
(c) III and IV (d) I, II, III and IV

137. Which of the following statements stands in favour of abiogenesis?

I. Spontaneous generation.
II. Origin of viruses and microbes.
III. Origin of life from living organisms.
IV. Origin of life from non-living matter.

The correct statement is

(a) I and II (b) II and III
(c) III and IV (d) Only IV

138. I. Random selection.
II. Convergent evolution.
III. Genetic drift.
IV. Divergent evolution.

Choose the correct option for Sewall's effect from above option (s).

(a) I and II (b) III and IV
(c) Only III (d) Only IV

139. Which of the following are the correct pair of homologous organs?

I. Hands of man and wings of bat.
II. Wings of bat and wings of cockroach.
III. Wings of bird and wings of butterfly.
IV. Fins of fish and forelimbs of horse.
V. Forearm of human and forelimbs of horse.

The correct combination is visible in optiion.

(a) I and II (b) I and V
(c) III and IV (d) IV and V

140. Which of the given pairs are correct?

I. Wings of insects and birds are homologous organ.
II. Wings of bats and birds are homologous organ.
III. Wings of insect and bats are analogous.
IV. Wings of insect and birds are analogous.

Choose the correct option.

(a) I and II (b) I and III
(c) I and IV (d) II, III and IV

141. In his theory of evolution, Lamarck explained

I. Internal vital force.
II. Effect of environment on organisms.
III. Inheritance of acquired characters.
IV. Use and misuse of organs.

Choose the correct combination.

(a) I and II (b) II and III
(c) I, II and IV (d) I, II, III and IV

142. Select the incorrect statements.

I. Natural selection is essential for evolution.
II. Natural selection does not include variations.
III. Concept of natural selection was given by Hugo de Vries.
IV. Mutation is a sudden inheritable change.
V. Synthetic theory is also called Neo-Darwinism theor of evolution.

The correct combination is a

(a) I, II and III (b) II, III and IV
(c) III, IV and V (d) II and III

143. Which of the following phenomena supports the Darwin's concept of natural selection in organic evolution?

I. Development of transgenic animals.
II. Production of Dolly.
III. Increased prevalance of pesticides has led to pesticid resistance in insects.
IV. Industrial melanism.

Choose the correct combination.

(a) I and II (b) II and III
(c) III and IV (d) I and IV

144. Lamarck's concept of inheritance of acquired characters was discarded by

I. Mendel's laws of inheritance.
II. Theory of natural selection.
III. Mutational theory.
IV. Theory of continuity of germplasm.

Choose the correct combination of the given options to complete the given statement.

(a) I and II (b) II and III (c) I and IV (d) III and IV

145. Which of the following features are connected with the modern theory of evolution?

I. Genetic and chromosomal mutation.
II. Genetic recombination and natural selection.
III. Reproductive isolation.

The correct combination is

(a) I and II (b) II and III
(c) I and III (d) I, II and III

146. Which of the following statements are correct?

I. Survival of the fittest is based upon the characteristics that are inherited.

II. Darwin's variations are small and directional.

III. The fitness is the end result of the ability to adapt.

IV. Genetic drift is operates in small populations.

V. Genetic drift operates in large populations.

VI. Presence of genetic drift upsets the Hardy-Weinberg equilibrium.

Choose the correct option.

(a) I, II, III and IV
(b) IV, V, VI and II
(c) I, II, III, V and VI
(d) I, II, III, IV and VI

147. Which of the following statements correctly defines the phenomenon of genetic drift?

I. Random change in gene allele frequency.

II. Occur by chance.

III. It is directional.

IV. Causes elimination of certain alleles.

V. Causes fixation of alleles.

The correct combination is

(a) I, II and III
(b) III, IV and V
(c) I, III and V
(d) I, II, IV and V

148. True statements regarding the genetic drift is/are

I. it mostly occurs in smaller populations.

II. certain alleles can be lost forever because of genetic drift.

III. founder effects and bottle neck effects are caused by genetic drift.

IV. mutations are primarly responsible for genetic drift.

The correct combination showing true statements is

(a) Only I
(b) III and IV
(c) II and IV
(d) All except IV

149. Which of the following statements regarding the evolution of plants and animals are correct?

I. Amphibians evolved into reptiles.

II. Fish with stout and strong fins could move on land and go back to water. This was about 350 million years ago.

III. Giants ferns fell to form coal deposits slowly.

IV. About 65 million years ago dinosaurs died out.

V. *Archaeopteryx* is the connecting link between birds and reptiles.

The correct combination is

(a) I and II
(b) III and IV
(c) V and I
(d) I, II, III, IV and V

150. Mark the correct statements.

I. Fitness of individuals means reproductive fitness.

II. Homology in vertebrate brain indicates common ancestry.

III. Theory of acquired character was given by de Vries.

IV. After industrialisation, the white moth population decreased due to predators.

The correct option is

(a) I, II and III
(b) I, III and IV
(c) II, III and IV
(d) I, II and IV

151. Natural selection

I. tends to increase its characters that enhances survival and reproduction.

II. causes adaptation.

III. acts on organism phenotype.

IV. mechanism of evolution explained by Darwin.

Which of the following statements are correct?

(a) I, II and III
(b) I and II
(c) II and IV
(d) I, III and IV

152. Choose the incorrect statements.

I. The essence of Darwinian theory about evolution can be seen in the phenomenon of natural selection.

II. The rate of appearance of new forms is not linked to the evolution.

III. Adaptive ability is a complete evolution.

IV. Mutations are random and directionless.

The correct option is

(a) I and II
(b) III and II
(c) I and III
(d) I and IV

153. Evidence which favours the theory of acquired character are

I. the absence of limbs in snakes.

II. the presence of webbed toes in aquatic bird.

III. lack of pigments in cave dwelling animals.

IV. darwin finches.

V. melanisation peppered moths.

Choose the correct option.

(a) I and II
(b) II and III
(c) I, II and IV
(d) I, II and III

154. When a species gets separated geographically, it evolves separately. Which of the following condition would determine whether they are now different species?

I. They fail to interbreed.

II. They failed to give fertile offspring.

III. They have different coloured body.

IV. They appear morphologically slightly different.

Choose the correct combination from given options.

(a) I and II (b) II and III
(c) III and IV (d) I and IV

155. From one population to other, the new mutation spreads by

I. bottle neck effect
II. budding
III. immigrants
IV. sexual reproduction
V. binary fission
VI. asexual reproduction

Choose the correct combination.

(a) I and II (b) III and IV
(c) IV and VI (d) I and VI

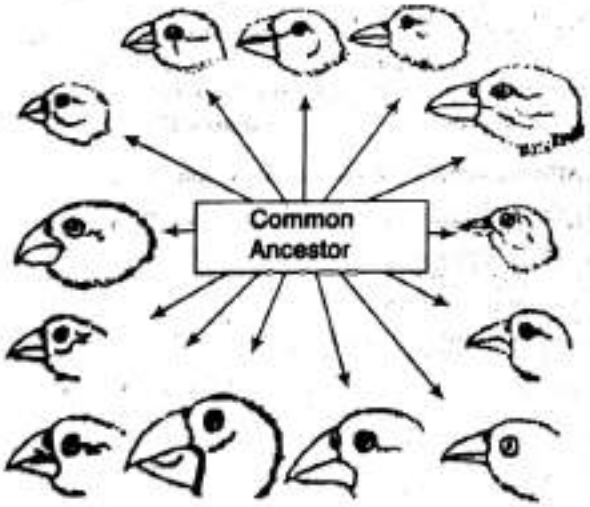
156. In which of the following situations would evolution occur.

	Migration	Selection Pressure	Variations due to Mutation
I.	Absent	Low	Low
II.	Absent	High	High
III.	High	Low	High
IV.	High	High	Low

Select the correct answer using the codes given below.

(a) I and II (b) I and III
(c) I and IV (d) II, III and IV

157. Identify what is indicated in the given diagram?



I. Natural selection.
II. Adaptive radiation.
III. Ecological succession.
IV. Different species of finches by mutation.

(a) I and II (b) I and III
(c) III and IV (d) II and IV

158. Find out the wrong statement about *Homo habilis*.

I. Also called able or skilful man.
II. Also called tool maker.
III. Fossil discovered from East Africa.
IV. 500 cc was its cranial capacity.
V. Have teeth like modern man.
VI. Lived nearly 2 million years ago.

The correct choice is

(a) IV and V (b) I, II and V
(c) II, III and VI (d) I, II, III, IV and VI

159. Which of the following statement is correct regarding the evolution of humans?

I. The skull of adult chimpanzee is more like adult human skull than baby chimpanzee skull.
II. The skull of baby chimpanzee is more like adult human than adult chimpanzee skull.
III. *Dryopithecus* is oldest human-like fossil.
IV. *Dryopithecus* was found in Miocene rock of Africa and Europe.

The correct option is

(a) I and II (b) I and III
(c) I and IV (d) II, III and IV

160. Primates which existed about 15 million years ago was/were

I. *Dryopithecus*
II. *Homo habilis*
III. *Ramapithecus*
IV. *Australopithecus*
V. *Homo erectus*
VI. Neanderthal man

Choose the correct option.

(a) I and II (b) III and IV
(c) V and VI (d) I and III

III. Matching Type

161. Match the following columns.

Column I		Column II
A. Darwin	1.	Inherited
B. Genetic drift	2.	Not inherited
C. Mutation in germ cells	3.	HMS Beagle
D. Mutation in somatic cells	4.	Founder effect

Codes

	A	B	C	D		A	B	C	D
(a)	1	2	3	4	(b)	3	4	1	2
(c)	3	4	2	1	(d)	4	3	2	1

162. Match the following columns.

Column I	Column II
A. Analogous organs	1. Ontogeny repeat phylogeny
B. Miller and Urey	2. Experiment (chemical evolution)
C. Oparin and Haldane	3. Chemical evolution (theory)
D. Human embryo have gill	4. Wings of bird and butterfly

Codes

	A	B	C	D
(a)	4	3	1	2
(b)	4	2	3	1
(c)	1	2	3	4
(d)	4	3	2	1

163. Match the following columns.

Column I	Column II
A. Genetic drift	1. Change in the population's allele frequency due to chance alone
B. Natural selection	2. Difference in survival individuals
C. Gene flow	3. Immigration or emigration changes the allele frequency
D. Mutation	4. Source of the new alleles

Codes

	A	B	C	D
(a)	1	2	3	4
(b)	1	2	4	3
(c)	1	4	2	3
(d)	4	2	1	3

164. Match the following columns.

Column I	Column II
A. Wallace	1. Natural selection
B. Malthus	2. Essay of population
C. Hardy-Weinberg law	3. *Biston betularia*
D. Industrial melanism	4. $(p+q)^2 = 1$

Codes

	A	B	C	D
(a)	1	2	4	3
(b)	1	2	3	4
(c)	1	3	4	2
(d)	2	3	4	1

165. Match the following columns.

Column I	Column II
A. Darwin	1. Natural selection
B. Lamarck	2. Inheritance of acquired character
C. Pasteur	3. Swan-necked experiment
D. de Vries	4. Mutational theory of inheritance

Codes

	A	B	C	D
(a)	2	3	4	1
(b)	1	3	4	2
(c)	1	2	3	4
(d)	1	2	4	3

166. Identify the cranial capacity *A*, *B* and *C* of the given primates.

Primates	Cranial capacities (in cubic centimetris)
1. Chimpanzee and gorilla	*A*
2. *Australopithecus*	500 cc
3. *Homo habilis*	*B*
4. Java ape man	800-1000 cc
5. Peking man	*C*

(a) A–325-500 c,c B–900 cc, C–800-1000 cc
(b) A–325-510 cc, B–700 cc, C–850-1000 cc
(c) A–325-510 cc, B–700 cc, C–850-1200 cc
(d) A–325-510 cc, B–700 cc, C–850-1400 cc

167. Match the column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Mesozoic	1. First amphibians
B. Devonian	2. Pro ation of reptiles
C. Palaeocene	3. Rai f modern mammals
D. Permian	4. Radiation of primitive mammals
	5. 160 million years

	A	B	C	D
(a)	5	4	3	2
(b)	5	1	4	2
(c)	5	1	2	3
(d)	5	1	4	3

168. 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.

169. In 1953 SL Miller created primitive earth conditions in the laboratory and gave experimental evidence for origin of first form of life from pre-existing 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.

170. Palaeontological evidences for evolution refer to the
(a) development of embryo
(b) homologous organs
(c) fossils
(d) analogous organs

171. Fossils are generally found in
(a) sedimentary rocks (b) igneous rocks
(c) metamorphic rocks (d) any type of rock

172. 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) the have biochemical similarities

173. Analogous organs arise due to
(a) divergent evolution
(b) artificial selection
(c) genetic drift
(d) convergent evolution

174. Which of the following is used as an atmospheric pollution indicator?
(a) Lepidoptera (b) Lichens
(c) *Lycopersicon* (d) *Lycopodium*

175. Animal husbandry and plant breeding programmes are the examples of
(a) reverse evolution
(b) artificial selection
(c) mutation
(d) natural selection

176. Appearance of antibiotic-resistant bacteria is an example of
(a) adaptive radiation
(b) transduction
(c) pre-existing variation in the population
(d) divergent evolution

177. Match the scientists listed under column I with ideas listed column II.

	Column I		Column II
A.	Darwin	1.	Abiogenesis
B.	Oparin	2.	Use and misuse of organs
C.	Lamarck	3.	Continental drift theory
D.	Wagner	4.	Evolution by natural selection

Codes

	A	B	C	D
(a)	1	4	2	3
(b)	4	1	2	3
(c)	2	4	3	1
(d)	4	3	2	1

178. Variations during mutations of meiotic recombinations are
(a) random and directionless
(b) random and directional
(c) random and small
(d) random, small and directional

179. $(p + q)^2 = p^2 + 2pq + q^2 = 1$, represents an equation used in
(a) population genetics
(b) Mendelian genetics
(c) biometrics
(d) molecular genetics

180. Which type of selection is industrial melanism observed in moth, *Biston betularia*?
(a) Stabilising (b) Directional
(c) Disruptive (d) Artificial

181. Evolution of life shows that life forms had a trend of moving from
(a) land to water
(b) dryland to wet land
(c) freshwater to sea water
(d) water to land

182. Which of the following is an example for link, species?
(a) Lobe fish (b) Dodo bird
(c) Sea weed (d) Chimpanzee

183. 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%

184. 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 thicks 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

185. The most accepted line of descent in human evolution is **(NEET 2016)**

(a) *Australopithecus* → *Ramapithecus* → *Homo sapiens* → *Homo habilis*
(b) *Homo erectus* → *Homo habilis* → *Homo sapiens*
(c) *Ramapithecus* → *Homo habilis* → *Homo sapiens*
(d) *Australopithecus* → *Ramapithecus* → *Homo erectus* → *Homo habilis* → *Homo sapiens*

Answers

1.	(a)	2.	(d)	3.	(d)	4.	(d)	5.	(b)	6.	(d)	7.	(b)	8.	(a)	9.	(b)	10.	(a)	11.	(a)	12.	(a)	13.	(d)	14.	(a)	15.	(c)
16.	(c)	17.	(a)	18.	(a)	19.	(c)	20.	(a)	21.	(b)	22.	(a)	23.	(a)	24.	(d)	25.	(a)	26.	(b)	27.	(c)	28.	(a)	29.	(b)	30.	(a)
31.	(b)	32.	(c)	33.	(c)	34.	(b)	35.	(b)	36.	(c)	37.	(b)	38.	(b)	39.	(c)	40.	(a)	41.	(a)	42.	(c)	43.	(d)	44.	(b)	45.	(d)
46.	(b)	47.	(a)	48.	(a)	49.	(a)	50.	(b)	51.	(c)	52.	(b)	53.	(d)	54.	(b)	55.	(d)	56.	(d)	57.	(c)	58.	(a)	59.	(b)	60.	(d)
61.	(b)	62.	(b)	63.	(c)	64.	(b)	65.	(c)	66.	(d)	67.	(a)	68.	(a)	69.	(b)	70.	(c)	71.	(d)	72.	(b)	73.	(a)	74.	(b)	75.	(d)
76.	(d)	77.	(b)	78.	(b)	79.	(b)	80.	(d)	81.	(a)	82.	(a)	83.	(d)	84.	(b)	85.	(b)	86.	(a)	87.	(c)	88.	(c)	89.	(b)	90.	(b)
91.	(d)	92.	(c)	93.	(c)	94.	(b)	95.	(c)	96.	(c)	97.	(c)	98.	(c)	99.	(b)	100.	(c)	101.	(b)	102.	(c)	103.	(a)	104.	(c)	105.	(d)
106.	(d)	107.	(b)	108.	(c)	109.	(a)	110.	(c)	111.	(b)	112.	(d)	113.	(a)	114.	(c)	115.	(a)	116.	(d)	117.	(a)	118.	(a)	119.	(d)	120.	(a)
121.	(b)	122.	(a)	123.	(b)	124.	(b)	125.	(b)	126.	(b)	127.	(a)	128.	(c)	129.	(a)	130.	(b)	131.	(c)	132.	(a)	133.	(a)	134.	(a)	135.	(c)
136.	(d)	137.	(d)	138.	(c)	139.	(b)	140.	(d)	141.	(d)	142.	(d)	143.	(c)	144.	(c)	145.	(d)	146.	(d)	147.	(d)	148.	(d)	149.	(d)	150.	(d)
151.	(d)	152.	(b)	153.	(d)	154.	(a)	155.	(b)	156.	(d)	157.	(a)	158.	(d)	159.	(d)	160.	(d)	161.	(b)	162.	(b)	163.	(a)	164.	(a)	165.	(c)
166.	(c)	167.	(b)	168.	(c)	169.	(d)	170.	(c)	171.	(a)	172.	(b)	173.	(d)	174.	(b)	175.	(b)	176.	(c)	177.	(b)	178.	(a)	179.	(a)	180.	(b)
181.	(d)	182.	(a)	183.	(a)	184.	(c)	185.	(c)																				