GPLUS EDUCATION

Date :
Time : **BIOLOGY**
Marks :

EVOLUTION

Single Correct Answer Type

1. Birbal Sahni was
   a) Palaeobotanist b) Zoologist c) Ornithologist d) Palaeozoologist
2. England in 1850s, *i. e.*, before industrialization 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 industrialization, *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
3. In a given population, the …A… of occurrence of alleles of a gene is supposed to remain …B… and even remain the same through generations. Hardy-Weinberg principle stated it using …C… equation
   Choose the correct option for A, B and C to complete the given NCERT statement
   a) A-frequency, B-unstable, C-algebraic
   b) A-frequency, B-stable, C-algebraic
   c) A-frequency, B-stable, C-simple
   d) A-frequency, B-stable, C-complex
4. Which of the following provides most evident proof of evolution?
   a) Fossils b) Morphology c) Embryo d) Vestigial organs
5. Which set includes only analogous organs?
   a) Wings of butterfly, housefly and bat
   b) Hindlegs of horse, grasshopper and bat
   c) Wings of butterfly and wingspead of bat and birds
   d) Mandibles of cockroach, mosquito and honey bee
6. Study of fossils is called
   a) Organic evolution b) Herpetology c) Cytology d) Palaeontology
7. Hugo de Vries's experimental organism was
   a) Fruitfly b) China rose plant c) Four O'clock plant d) Evening primrose
8. A biologist is trying to infer how five closely related species of snakes are related to one another. She noticed that some of the snakes have forked tongues and others do not. Which of the following would help her to distinguish their ancestral state?
   a) She looks among snake fossils for evidences that being forked is a characteristic of the ancestor of this group, but determines no such fossils exists
   b) She locates a specimen of a more distantly related snake to see if it has a forked tongue
   c) She looks at a representative mammal species to see if it has a forked tongue
   d) She flips a coin
9. Origin of life occurred in
   a) Precambrian b) Coenozoic c) Palaeozoic d) Mesozoic
10. In which of the following situations would evolution would occur

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

III. High IV. High	Low High	High Low

Select the correct using the codes given below

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

11. Theory of natural selection was given by
    a) Lamarck b) Darwin c) Alfred Wallace d) JBS Haldane
12. What's the difference between natural selection and sexual selection?
    a) Sexual selection occurs during sexual inter course b) Natural selection is a type of sexual selection
    c) Sexual selection is a type of natural selection d) Sexual selection occurs within demes
13. What do homologous organs indicates?
    a) Different ancestry b) Common ancestry
    c) Independent development d) Dependent development
14. Proteins found in the blood of man and ape are similar. This is an example of
    a) Cellular homology b) Molecular homology c) Cellular analogy d) Molecular analogy
15. According to the Neo-Darwinian theory, which of the following is responsible for the origin of new species?
    a) Mutations b) Useful variations
    c) Mutation together with natural selection d) Hybridization
16. 'Continuity of germplasm' theory was given by
    a) Hugo de Vries b) Weismann c) Darwin d) Lamarck
17. Select the wrong pair
    a) Oparin – Probiont b) Spallanzani – Approve abiogenesis
    c) Haldane – Hot dilute soup d) Fox – Coacervates
18. Divergent evolution gives rise to
    a) Homologous organ b) Analogous organs c) Both (a) and (b) d) None of these
19. The greatest evolutionary change enabling the land vertebrates to be completely free from the water. Habitat was the development of
    a) Four legs b) Four-chambered heart
    c) Lungs d) Shelled eggs and internal fertilization
20. Which of the following is not an examples of adaptive radiation?
    a) Wombat, marsupial rat, flying phalanges b) Darwin's finches
    c) Different placental mammals in Australia d) Placental wolf and Tasmanian wolf
21. Pasteur and Koch are related to
    a) Discovery of nucleic acids (DNA and RNA) b) Discovery of ultracentrifuge
    c) Germ theory of disease d) Gene splicing
22. Some persons can move their pinnae. This ability is imparted by
    a) Recapitulation b) Atavism c) Over specialization d) Regeneration
23. Darwin judged the fitness of an individual by
    a) Ability to defend itself b) Strategy to obtain food
    c) Number of offsprings d) Dominance over other individuals
24. Why the genetic variation is important from an evolutionary standpoint/
    a) If all organisms were the same, the entire population would be vulnerable to particular pathogens, like viruses
    b) All evolutionary adaptations (*e. g.*, the origin of forelimbs) are the result of the gradual build up of genetic difference between organisms over geological time
    c) Evolution (at the population level) refers to changes in the frequencies of genes in the population overtime
    d) All of the above

25. '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*
26. Who discarded the theory of spontaneous generation forever?
    a) Louis Pasteur b) Franscisco Redi c) Spallanzani d) Aristotle
27. Saltation stands for
    a) Single step large mutation b) Single step small mutation
    c) Double step small mutation d) Double step large mutation
28. Which of the following statement is true regarding the theory of natural selection?
    a) It was the first theory of organic evolutions
    b) It do not explain fossils
    c) It has been failed to explain the origin of variations
    d) It has been successful to explain the origin of variations
29. '*Ontogeny Recapitulates Phylogeny*'is narrated in which of the evidences for organic evolution?
    a) Palaeontological evidence b) Physiological evidence
    c) Embryological evidence d) Anatomical evidence
30. In the developmental history of mammalian heart, it is observed that it passes through a two-chambered fish-like heart, three-chambered frog-like heart and finally four-chambered stage. To which hypothesis can the above cited statement be approximated?
    a) Biogenetic law b) Hardy-Weinberg law
    c) Lamarck's principle d) Mendelian principles
31. Which of the following statements is correct?
    a) *Homo erectus* is the ancestor of man
    b) Cro-magnon man's fossil has been found in Ethiopia
    c) *Australopithecus* is the real ancestor of modern man
    d) Cromagnon man is the most recent ancestor of *Homo sapiens*
32. 'Hot dilute soup' was given by
    a) Oparin b) Haldane c) Urey d) None of these
33. Vestigial organ in human being is
    a) Incisor b) Molar c) Premolar d) None of these
34. Darwinian 'natural selection' of evolution was inspired by
    a) Thomas Malthus b) Alfred Wallace c) Dr. David Lack d) August Weismann
35. Evolutionary changes does not come about at the level of individual but at the level of
    a) Two persons b) Ten persons c) Population d) Small group
36. Which of the following statements are wrong?
    I. Thomas Malthus is well known for his book on population
    II. The work of Thomas Malthus on population did not influence Darwin
    III. There must be a genetic basic for getting selected and to evolve
    IV. All the finches on the Galapagos islands are descended from a common ancestor
    Choose the correct option
    a) Only I b) Only II c) I and III d) IV and III
37. Which of the following animal extinct recently?
    a) Draco b) Dinosaur c) Mammoth d) Pteridosperms
38. 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
39. Maximum cranial capacity is of
    a) Neanderthal man b) Cro –magnon man c) Modern man d) Java man
40. In pleistocene epoch, the ancestor of horse is

a) *Eohippus* b) *Mesohippus* c) *Merychippus* d) *Equus*

41. Which group is evolutionary modern?
a) Gymnosperms b) Grasses c) Pteridophytes d) Algae

42. The Mesozoic era is also called as the golden age of the
a) Amphibians b) Reptiles c) Mammals d) birds

43. In human beings, vestigial organs are
a) Wisdom teeth, coccyx, vermiform appendix, nail eyelid
b) Wisdom teeth, coccyx, vermiform appendix, pancreas, elbow joint
c) Wisdom teeth, coccyx, vermiform appendix, nictitating membrane, auricular muscles
d) Coccyx, wisdom teeth, nail, auricular muscles

44. Which one of the following is the most primitive ancestor of man?
a) *Homo habilis* b) *Australopithecus*
c) *Ramapithecus punjabicus* d) *Homo neanderthalensis*

45. First land plants (psilophyte) were originated in
a) Ordovician period b) Cambrian period c) Silurian period d) Cretaceous period

46. Earliest fossil ape prior to the ape man was
a) *Ramapithecus* b) *Dryopithecus* c) *Australopithecus* d) *Homo erectus*

47. Arrange the following events of modern concept of evolution sequentially
I. Genetic variations in population
II. Natural selection
III. Heredity
IV. Isolation
V. Speciation
The correct option is
a) I, II, III, IV, V b) I, III, II, IV, V c) I, IV, III, II, V d) I, IV, II, III, V

48. Human beings belongs to the family-Hominidae which evolved about 24 million years ago. The relative family-Pongidae includes
a) Chimpanzee b) Gorilla c) Orangutan d) All of these

49. The chronological order of human evolution from early to the recent 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 – Pithecant – hropus pekinensis – Homo erectus*

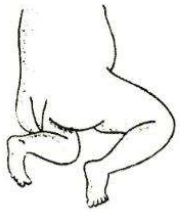
50. The main point of Darwin's theory is
a) Variation b) Natural selection c) Enormous fertility d) mutation

51. Which of the set represents vestigial organs?
a) Vermiform appendix, body hair and patella b) Wisdom teeth, body hair and atlas vertebre
c) Ear muscles, cochlea and coccyx d) Vermiform appendix, ear muscles and coccyx

52. Connecting link between Annelida and Mollusca is
a) *Peripatus* b) *Lepidosiren* c) *Neopilina* d) *Protopterus*

53. Which of the following examples supports Lamarckism?
a) Webbed toes of aquatic bird b) Cave dwellers
c) Flightless bird d) All of these

54. Identify the vestigial organ in the given figure



a) Vermiform appendix
b) Auricular
c) Coccyx (short tail)
d) Plica semilunaris

55. Darwin's finches represents
a) Morphological variation
b) Geographical isolation
c) Climatic variation
d) Reproductive isolation

56. Which of the following evidences does not favour the Lamarckian concept of inheritance of acquired characters?
a) Absence of limbs in snakes
b) Presence of webbed toes in aquatic birds
c) Melanization in peppered moth
d) Lack of pigment in cave-dwelling animals

57. Oparin and Haldane's theory is also called
a) Chemical theory of origin of life
b) Modern theory of origin of life
c) Naturalistic theory
d) All of the above

58. A microsphere is a ...A... collection of organic macromolecules with double layered outer boundary. The term microsphere was given by ...B...
Complete the given statement by choosing correct options for A and B with reference to NCERT textbook
a) A-non-living, B-Sydney Fox
b) A-living, B-Oparin
c) A-non-living, B-Haldane
d) A-living, B-Altman

59. Which is not true of *Archaeopteryx*?
a) Jaws are modified into beak
b) Tail is bony and long
c) Forelimbs are modified into wings
d) Connecting link between birds and amphibians

60. The sequence of origin of life could be
a) Organic materials → inorganic materials → colloidal aggregate → eobiont → cell
b) Inorganic materials → organic materials → colloidal aggregate → eobiont → cell
c) Inorganic materials → organic materials → eobiont → cell → colloidal aggregate
d) Organic materials → inorganic materials → eobiont → cell → colloidal aggregate

61. Australian marsupials are the example of
a) Homologous radiation
b) Analogous radiation
c) Adaptive radiation
d) Convergent radiation

62. Which of the following in birds indicates their reptilian ancestry?
a) Scales on their hindlimbs
b) Four-chambered heart
c) Two special chambers crop and gizzards in their digestive tract
d) Egg with a calcareous shell

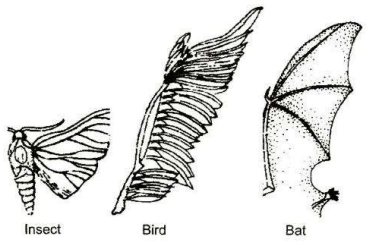
63. Big-Bang theory attempts to explain the origin of
a) Earth
b) Solar-system
c) Universe
d) Contenents

64. 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

65. According to one of the most accepted theory, the earth atmosphere before any life had originated consists of H_2O, H_2, NH_2 and
a) CH_4
b) O_2
c) N_2
d) None of these

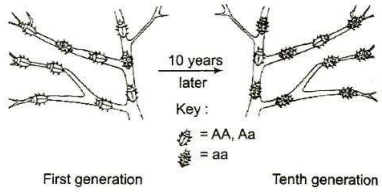
66. The first life on the earth was developed through
a) Chemical evolution
b) Penspermia
c) Biogenesis
d) Abiogenesis

67. Given diagram depicts



a) Analogous organs b) Homologous organs c) Vestigial organs d) Heterologous organs

68. The given diagram illustrates the change that occurred in the frequency of phenotypes in an insect population over 10 generations. A probable explanation for this change would be



a) Over time there was a decrease in the adaptive value of gene a
b) Over time there was an increase in the adaptive value of gene a
c) Over time there was an increase in the population of AA, Aa
d) Over time there was an decrease in the mutation rate of gene a

69. Which compound has very important role in prebiotic evolution?
a) SO_2 b) NO c) CH_4 d) SO_3

70. Origin of life as a result of chemical evolution was properly explained by
I. Fox II. Oparin
III. Wateson IV. Haeckel
V. Mendel VI. Crick
Choose the correct option
a) I and II b) III and IV c) V and VI d) Only II

71. Name given to fossil hominid of Shivalik hills in India is
a) *Ramapithecus* b) *Australopithecus* c) *Pithecanthropus* d) *Pithecanthropus*

72. Which of the following statements are correct?
I. Bird originated 150 million years ago
II. Mammals originated 200 million years ago
III. Multicellular organisms 1 billion years ago
The correct combination is
a) I and II b) II and III c) I and III d) I, II and III

73. Hardy-Weinberg described the frequency of ...A... for an entire ...B... .
Choose the correct option for A and B to complete the given NCERT statement
a) A-genes; B-population
b) A-genotype; B-population
c) A-phenotype; B-population
d) A-alleles; B-population

74. The modern man differs from the apes in
a) Protruding eyes b) Spare body hair
c) Wearing of clothes d) Arms shorter than legs

75. What did Miller obtained from his experiment?
a) Amino acid b) Organic compounds
c) Peptide d) All of these

76. 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

77. 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

78. Organic evolution is also called
a) Chemical evolution
b) Stellar evolution
c) Biological evolution
d) All of these

79. In equation, $p^2 + 2pq + q^2 = 1$
Where,
I. p^2= Homozygous dominant genotype
II. q^2= Heterozygous dominant genotype
III. $2pq$= Heterozygous genotype
Identify which entity (p^2, q^2 and $2pq$) is not described correctly?
a) Only I
b) I and III
c) I and II
d) Only II

80. The present concept of evolution is known as
a) Neo-Darwinism theory of evolution
b) Synthetic theory of evolution
c) Modern concept theory of evolution
d) All of the above

81. 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

82. Giant dinosaurs and reptiles predominated during the Jurassic period. This period was also marked the evolution of higher insects and angiosperms, conifers, cycads, etc. Jurassic period belongs to …….. era
Complete the given statement by choosing an appropriate option
a) Cenozoic
b) Palaeozoic
c) Mesozoic
d) Proterozoic

83. Weismann cut off tails of mice generation after generation but tails neither disappeared nor shortened showing that
a) Lamarck's theory was wrong
b) Darwin's theory was wrong
c) Synthetic theory was wrong
d) Mutational theory was wrong

84. The pioneers in the field of organic evolutions are
a) Darwin, Lamarck, Robert Hooke, Huxely
b) Darwin, Hugo de Vries, Lamarck, Huxley
c) Darwin, Lamarck, Hugo de Vries, Robert Brown
d) Darwin, Lamarck, Hugo de Vries, Purkinje

85. 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

86. Large size of pinnae in animals of warm region in comparison to animal of cold region is due to
a) Dollo's law
b) Gloger's law
c) Cope's law
d) Allen's rule

87. The gases condensed under …A… and formed the galaxies of the present day universe. In the solar system of the milky way galaxy, earth was supposed to have been formed about …B… back. There was no atmosphere …C… on the earth. Water vapour, …D… carbon dioxide and ammonia released from molten mass covered the surface.
Choose the correct option for A, B, C and D to complete the given paragraph with reference to NCERT textbook
a) A-Gravitation, B-4.5 billion years, C-Early, D-Methane
b) A-Acceleration, B-4.5 billion years, C-Early, D-Methane
c) A-Acceleration, B-4.5 billion years, C-Early, D-Ethane

d) A-Gravitation, B-4.5 billion years, C-Early, D-Ethane

88. Which species of human ancestor was named lucy?
    a) Heidelberg man
    b) Cro-magnon man
    c) *Australopithecus africanus*
    d) *Ramapithecus punjabicus*
89. The Neanderthal man with a brain size …A… cc lived in near …B… between …C… to …D… years back. The correct choices for *A*, *B*, *C* and *D* are
    a) A-1000, B-East and Central Asia, C-100000, D-40000
    b) A-1400, B-East and Central Asia, C-100000, D-40000
    c) A-1400, B-East and West Asia, C-100000, D-40000
    d) A-1400, B-East and West Asia, C-100000, D-10000
90. What kind of evidence suggested that man is more closely related with chimpanzee than with other hominoid apes?
    a) Evidence from DNA of sex chromosome only
    b) Comparison of chromosome morphology only
    c) Evidence from fossil remains and the fossil mitochondrial DNA alone
    d) Evidence from DNA extracted from sex chromosome, autosomes and mitochondria
91. The first non-cellular form of life could have originated
    a) 3 billion years back
    b) 2 billion years back
    c) 4 billion years back
    d) 1 billion years back
92. The idea that the life originates from pre-existing life is referred as
    a) Biogenesis theory
    b) Special creation theory
    c) Abiogenesis theory
    d) Extraterrestrial theory
93. 'Darwin natural selection theory' could not explain
    a) Retention of characters of no use or vestigial organ
    b) Giraffe has long neck
    c) Giraffe has long legs
    d) Survival of the fittest
94. First autotrophs on the primitive earth was/were
    a) Aerobic
    b) anaerobic
    c) Both (a) and (b)
    d) Photosynthetic protist
95. Evolutionary history of an organism is known as
    a) Genetics and interpretation
    b) Biogenesis
    c) Recapitulation
    d) evolution
96. According to the Darwin's theory of evolution, differences between the species occurs due to
    a) The disuse of body structures
    b) The transmission of acquired characteristics
    c) Natural selection
    d) Mutagenic agents
97. A change in the relative abundance of an allele (the allelic frquency) within a population, over a succession of generations is called
    a) Micro-evolution
    b) Macro-evolution
    c) Co-evolution
    d) Phylog-enetic evolution
98. Gradual accumulation of adaptation of changing environment leads to the origin of
    a) New species
    b) A genus
    c) Old structures
    d) All of these
99. Which of the following statement is the most appropriate one in an evolutionary sense?
    a) A lion is successful at capturing prey but has no cubs
    b) A lion has many cubs, eight of which live to adulthood
    c) A lion overcomes a disease and lives to have three cubs
    d) A lion has a harem of many lionesses and one cub
100. Microbial experiments show that …A… advantageous …B… when selected will result in observation of new phenotypes. Over few generations, this would result in …C… . Natural selection is a process in which …D…

variations enabling better survival are enabled to reproduce and leave greater number of progeny
Choose the correct option for A, B, C and D to complete the given NCERT statement
a) A-post existing, B-mutation, C-speciation, D-heritable
b) A-post existing, B-mutation, C-speciation, D-unheritable
c) A-pre-existing, B-mutation, C-speciation, D-heritable
d) A-existing, B-mutation, C-speciation, D-heritable

101. The force responsible for fixing in population of neutral characteristics is
a) Genetic drift b) Mutation
c) Reproduction d) Genetic recombination

102. Mutation is more common when it is present in
a) Recessive condition b) Dominant condition
c) Constant in population d) None of these

103. Choose the correct statements
I. Law of embryonic development was given by Von Baer
II. Recapitulation theory was proposed by Haeckel
III. Haeckel theory states that 'Ontogeny repeats phylogeny'
IV. Haeckel theory and biogenetic law were proposed by the same person
The correct combination is
a) I and II b) II and III c) III and I d) I, II, III and IV

104. '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
a) Theory of inheritance of acquired characters b) Theory of germplasm
c) Theory of pangenesis d) Theory of mutation

105. Synthetic theory of evolution was developed by
a) Several biological specialities b) Darwin
c) Mendel d) Wallace

106. Natural indicator of industrial pollution is
a) Algae b) Fungi c) Lichen d) Bacteria

107. Lamarckism cannot explain
a) Webbed toes in aquatic birds b) Weak muscles in the son of a wrestler
c) Long narrow and limbless body of snakes d) Heterophylly

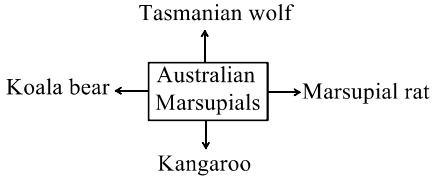
108. Arrange the periods of Palaeozoic era in ascending order in a geological time scale.
a) Cambrian –Ordovician –Silurian –Devonian –Carboniferous -Permian
b) Cambrian – Devonian – Ordovician – Silurian –Carboniferous -Permian
c) Cambrian –Ordovician – Devonian – Silurian –Carboniferous -Permian
d) Silurian – Devonian – Cambrian – Ordovician – Permian - Carboniferous

109. What is common to whale, seal and shark?
a) Seasonal migration b) Thick subcutaneous fat
c) Convergent evolution d) Homeothermy

110. Give the name of the first organism who invaded land
a) Plants b) Consumers c) Animal d) Carnivores

111. 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) $p^2 + 2pq + q^2 = 1$

112. Identify what the given diagram indicates



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

113. Speciation is the evolutionary process by which
   a) A new gene pool is formed
   b) Evolutionary paths of the species converge
   c) Hybrids species are formed
   d) Differences in physical traits appears
114. First human like hominid is known as
   a) Neanderthal man b) *Homo habilis* c) *Dryopithecus* d) *Homo erectus*
115. 'Darwin's finches' refers to
   a) Fossils of birds collected by Darwin at Galapagos islands
   b) A type of birds present on Galapagos islands
   c) Migratory birds collected by Darwin at Galapagos islands
   d) Fossils of reptiles collected by Darwin at Galapagos islands
116. Age of fossils in the past was generally determined by radio-carbon method and other methods involving radioactive elements found in the rocks. More precise methods, which were used recently and led to the revision of the evolutionary period for different groups of organisms, include
   a) Study of carbohydrates/ proteins in fossils b) Study of conditions of fossilization
   c) Electron spin resonance (ESR) and fossil DNA d) Study of carbohydrates/proteins in rocks
117. Which of the following is not vestigial in man?
   a) Tail vertebrae b) Nails
   c) Nictitating membrane d) Vermiform appendix
118. Survival of the fittest is possible due to
   a) Over production
   b) Favourable variation
   c) Environmental change
   d) Inheritance of acquired characters
119. Which of the following branch of biology helps in to know the existence of coal?
   a) Palaeobotany b) Bacteriol ogy c) Economic botany d) Ecology
120. Which of the following factor is most likely to decrease the genetic diversity in a population?
   a) Genetic recombination b) Mutation
   c) Genetic drift d) Stabilizing natural selection
121. The first cellular form of life could have originated
   a) 2000 million years back b) 11000 million years back
   c) 1500 million years back d) 500 million years back
122. Origin of life as a result of chemical evolution has been properly explained by or the most logical biochemical theory of origin of life has been given by
   a) Stanley Miller b) Darwin c) A I Oparin d) S Fox
123. The structural similarities between the flippers of whales and the arms of human are used to show that
   a) Human species began life in the oceans
   b) Human species and whales have a common ancestry
   c) Whales are older than the human species
   d) Whales evolved from the human species
124. Fossil X is older than fossil Y if
   a) X was found deeper in sediment than Y
   b) Y was found deeper in sediment than X
   c) Y had less vestigial organs
   d) Fossil Y had a homologous and analogous organs of X
125. I. Oparin's theory of origin of life is based on …A…
   II. Chemical theory of origin of life was given by …B…

Choose the correct option for A and B to complete the statements I and II

a) A-biological evolution; B-Oparin
b) A-elemental evolution; B-Haldane
c) A-organic evolution; B-Oparin and Haldane
d) A-chemical evolution; B-Oparin and Haldane

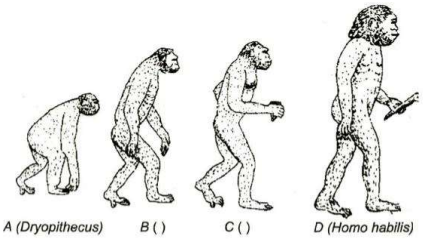
126. The concept of natural selection in evolution was proposed by
a) Charles Robert Darwin
b) August Weismann
c) Hugo de Vries
d) Jean Baptiste Lamarck

127. Darwin proposed that new species evolve from ancestral forms by the
a) Gradual accumulation of adaptations to changing environment
b) Inheritance of acquried adaptation to the environment
c) Struggle for limited resources
d) Accumulation of mutations

128. Which of the following is not a correct pair?
a) Mesozoic era - Age of mammals
b) Origin of species - Charles Darwin
c) Study of fossil – Palaeontology
d) Mutation theory – Hugo de Vries

129. S L Miller's closed flask contained
a) CH_4
b) H_2
c) NH_3 and H_2O
d) All of these

130. Give the name of *B* and *C*



a) B-*Ramaithecus*; C-*Homo erectus*
b) B-Ramapithecus; C-*Australopithecus*
c) B-*Australopithecus*; C-*Ramapithecus*
d) B-*Australopithecus*; C-*Homo erectus*

131. The primate, which existed 15 million years ago, among these was
a) *Homo habilis*
b) *Australopithecus*
c) *Ramapithecus*
d) *Homo erectus*

132. Which type of growth living organism undergoes?
a) Reversible
b) Apical
c) Accretion
d) Intussusception

133. Directional selection favours
a) One extreme from over the other extreme from over intermediate from of a trait
b) Both extremist form of trait
c) Environmental differences
d) Intermediate form of a trait

134. 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) Increasing brain capacity
d) Upright posture

135. 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) Abiogenesis
c) Panspermia
d) Chemogeny

136. In which of the following era first mammal like reptile originated?
a) Permian period
b) Triassic period
c) Jurassic period
d) Tertiary period

137. Darwin judged the fitness of an individual by
a) Ability to defend itself
b) Strategy to obtain food
c) Number of offsprings
d) Dominance over other individuals

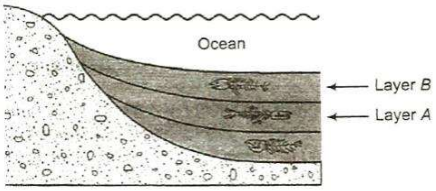
138. In the theory of evolution, Lamarck explained
I. internal vital force
II. effect of environment on organisms
III. inheritance of acquired characters

IV. use and disuse 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

139. Evolutionary development of a species can be studied by
   a) DNA analysis
   b) Finding age by carbon dating
   c) Studying fossils of the species
   d) All of the above
140. Phenomenon of industrial melanism demonstrates
   a) Reproductive isolation
   b) Induced mutation
   c) Natural selection
   d) Geographical isolation
141. Diversity of living organisms is due to
   a) Instant changes
   b) Polyploidy
   c) Long term evolutionary changes
   d) Short term evolutionary changes
142. Darwin's book 'Origin of New Species by Natural Selection' was published in
   a) 1809 b) 1859 c) 1957 d) 1869
143. What is the difference between genetic drift and changes drift to the natural selection?
   a) Genetic drift do not requires the presence of variations
   b) Genetic drift rarely involves competition between the members of a species
   c) Genetic drift is most effective in very large populations but natural selection operates in a small isolated population
   d) There is no difference between genetic drift and natural selection
144. *Homo sapiens* were arose during
   a) Ice-age between 25000-10000 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
145. Which phenomena confined the pouched mammals of Australia survived because of lack of competition from any other mammals?
   a) Continental origination
   b) Continental shifting
   c) Continental drifting
   d) Continental evolution
146. Which of the following animals is not only a living fossil but also considered as connecting link?
   a) *Sphenodon* b) *Limulus* c) *Neopilina* d) *Latimeria*
147. Fossils of *Homo erectus* was found in
   a) Java in 1891 b) India in 1921 c) Africa in 1927 d) Australia in 1945
148. Which of the following is a unit of natural selection?
   a) Genus b) Species c) Individual d) Population
149. Industrial melanism is an example of
   a) Protective resemblance with the surroundings
   b) Defensive adaptation of skin against ultraviolet radiations
   c) Drug resistance
   d) Darkening of skin due to smoke from industries
150. Stanley Miller proposed origin of life by
   a) Chemical synthesis b) Abiogenesis c) Biogenesis d) None of these
151. Anthropoids were evolved into
   a) Apes, *Proconsul* and monkeys
   b) Apes, cro-magnon man and old world monkeys
   c) *Proconsul*, new world monkeys and peking man
   d) New world monkeys, *Proconsul* and *Homo habilis*
152. The diagram below shows an undisturbed sedimentary strata at the bottom of an ocean. The fossils found in layer *B* resemble the fossils found in layer *A*. This similarity suggests that



a) The fossils in layer *B* were formed before the fossils in layer *A*
b) Modern forms of the life may have evolved from earlier forms of life
c) Vertebrate fossils are only found in sediments
d) The fossils in layer *A* must be more complex than those in layer *B*

153. Hardy –Weinberg equilibrium is known to be affected by gene flow, genetic drift, mutation, genetic recombination and
a) Evolution b) Limiting factors c) Saltation d) Natural selection

154. Struggle for existence and survival of the fittest theories were given by
a) Wallace b) Darwin c) Lamarck d) None of these

155. Theory of continuity of germplasm was given by
a) August Weismann b) Lamarck c) Darwin d) Wallace

156. The process by which different type of finches were evolved in Galapagos islands is
a) Adaptive radiation b) Geographic similarity
c) Geographic dissimilarity d) Unadaptive radiation

157. An evolutionary process, giving rise to new species adapting to new habitat and ways of life is called
a) Adaptive radiation b) Adaptation
c) Convergent evolution d) Microevolution

158. Natural selection is a process in which …A… variations enables better survival and ability to …B… and leave …C… number of progeny
Choose the correct options for A, B and C to complete the given NCERT statement
a) A-heritable, B-reproduce, C-greater b) A-non-heritable, B-reproduce, C-greater
c) A-non-heritable, B-reproduce, C-lesser d) A-heritable, B-reproduce, C-lesser

159. Which of the follows have not left any evidence of organic evolution?
a) *Archaeopteryx* b) Cow c) *Peripatus* d) *Neophilina*

160. Biological concept of species was given by
a) E Mayer b) Darwin c) De Vries d) Mendel

161. Somatic cells of gorilla, chimpanzee and orangutan have
a) 44 chromosomes b) 42 chromosomes c) 46 chromosomes d) 48 chromosomes

162. 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, III b) I and II c) II and IV d) I and III

163. Darwinian fitness can be estimated by
a) How long different individual in a population survive
b) Number of offsprings produced by different individual in population
c) Individual have a large size in population
d) Species recover after mass extinction

164. The first life on earth consists of
a) Provirus b) Protovirus c) Virus d) Bacteria

165. Factor affecting the process of speciation are
I. Mutation

II. Recombination
III. Natural selection
IV. Hybridisation
V. Genetic drift
VI. Polyploid
VII. Isolation
Choose the correct combination
a) I, II, V, VII and VI
b) II, VI, IV, III and V
c) III, IV, V, VII and II
d) I, II, III, IV, V, VI and VII

166. Jurassic period of the Mesozoic era is characterized by
a) Gymnosperms are dominant plants and first birds appear
b) Radiation of reptiles and origin of mammals like reptiles
c) Dinosaurs become extinct and angiosperms appear
d) Flowering plants and first dinosaurs appear

167. Blood groups-A and B are found in
a) Monkeys b) Apes c) Dogs d) Cats

168. An organism which is the connecting link between the animals and plants is
a) Bacteria b) Cyanobacteria c) *Euglena* d) *Amoeba*

169. …… organs shows adaptive radiation.
Complete the given statement with an appropriate option given below
a) Homologous b) Analogous c) Progressive organs d) Similar in structure

170. Identify the phenomenon in which a new set of population is formed the set of existing population due to the excessive change in the allele frequency
a) Founder effect b) Evolutionary effect c) Bottle-neck effect d) None of the above

171. Age of gymnosperm is
a) Cenozoic era b) Mesozoic era c) Palaeozoic era d) Proterozoic era

172. Which of the following example of variation is not important from an evolutionary standpoint?
a) Genetic differences between individual organisms comprising the population
b) Inherited difference between individual organisms comprising the population
c) Both (a) and (b)
d) Difference due to diet, health, age and accident that have no affect on an individual's ability to survive and reproduce

173. Organs which are anatomically different, but performs similar functions are called
a) Analogous organs b) Homologous organ c) Vestigial organs d) Heterologous organs

174. Coacervates are
a) Protobionts having polysaccharide, protein and H_2O
b) Protein aggregate
c) Protein and lipid aggregates
d) None of the above

175. The primates nearest to humans in the evolutionary line is
a) New world monkeys b) Apes c) Lemurs d) Echidna

176. Primitive man was originated during
a) Miocene b) Holocene c) Pleistocene d) Pliocene

177. Survival of the fittest is the basic principle of a competition. Its importance in organic evolution was explained by
a) Lamarck b) de Vries c) Darwin d) Mendel

178. Which of the following is an example of an ancestral homology?
a) Almost all modern reptiles, birds and mammals have forelimbs, a trait they also share with contemporary amphibians

b) The first birds and all their descendant species have feathers, a trait that is unknown in any other group
c) Humans and many insect species have eyes
d) All of the above

179. Swan-necked flask experiment proved
a) Biogenesis b) Abiogenesis c) Gene therapy d) Both (a) and (b)

180. Industrial melanism was highlighted by
a) *Mimosa pudica* b) *Triticum aestivum* c) *Biston betularia* d) Rock python

181. de Vries gave his mutation theory on organic evolution, while working on
a) *Althea rosea* b) *Drosophila melanogaster*
c) *Oenothera lamarckiana* d) *Pisum sativum*

182. 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* 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) All excepts I

183. Select the correct statement from the given options
a) Darwinism variation are small and directionless
b) Fitness is the end result of the ability to adapt and gets selected by nature
c) All mammals except whales and camels have seven cervical vertebrae
d) Mutations are random and directional

184. Human arm is homologous to
a) Seal flipper b) *Octopus* tentacle c) Bird wing d) Both (a) and (c)

185. Lamarck's theory of evolution is also known as
a) Theory of acquired characters
b) Theory of genetic characters
c) Theory of spontaneous characters
d) Theory of impose characters

186. Which fossil man has been known from Shivalik hills in India?
a) *Ramapithecus* b) *Zinjanthropus* c) *Shivapithecus* d) *Pithecanthropus*

187. The crosspterygian fish '*Latimaria*' is considered as the ancestor of terrestrial tetrapods. During which period these fishes evolved into Amphibians?
a) Devonian b) Silurian c) Ordovian d) Cambrian

188. *Australopithecus* is also called
a) Java ape man b) First ape man c) African ape man d) Both (b) and (c)

189. According to de Vries theory, evolution is
a) Discontinuous b) Jerky
c) Continuous and smooth d) Both (a) and (b)

190. Which is a unit of evolution?
a) Cell b) Individual c) Population d) Species

191. Primates which existed about 15 million years ago 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) Only III

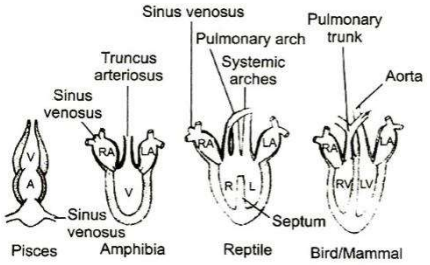
192. The Coenozoic era is often designated as
a) Age of fish b) Age of reptiles c) Age of mammals d) Age of amphibians

193. When and who wrote the book. *The origin of species*?
a) Mendel in 1809 b) Wallace in 1858 c) Lamarck in 1869 d) Darwin in 1859

194. Spontaneous generation theory was given by
a) F Redi b) L Spallanzani c) Louis Pasteur d) Aristotle

195. What is the relationship between the wing of a bird and the wing of a bat?
a) They are homologous because they represent modified forms of a trait present in a common ancestor (forelimbs)
b) They are analogous because while each carries out the same function (fight), this trait has arisen independently as a result of convergence
c) There is no relation between the wings of bird and wings of bat
d) They both have undergone severe mutation

196. Given diagram depicts



a) Evolutionary evidences from comparative anatomy and physiology
b) Evolutionary evidences from embryology
c) Evolutionary evidences from biochemistry and physiology
d) Evolutionary evidences from cytology

197. *Homo erectus* lived about
a) 2 million years ago b) 1.5 million years ago
c) 1 million years ago d) .5 million years ago

198. The concept of chemical evolution is based on
a) Crystallization of chemicals
b) Interaction of water, air and clay under interse heat
c) Effect of solar radiation on chemicals
d) Possible origin of life by combination of chemicals under suitable environment conditions

199. The stage next to *Homo habilis* was
a) *Homo erectus* b) *Homo sapiens* c) *Dryopithecus* d) Neanderthal man

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

201. In which era, life was absent?
a) Archaeozoic b) Palaeozoic c) Proterozoic d) Azoic

202. The first cell like structure was appeared in
a) Air b) Mountain c) Ocean d) Soil

203. Synthesis of amino acids to prove that amino acids were formed in primitive ocean was experimentally proved by
a) Sydney Fox b) Oparin c) Haldane d) Stanley Miller

204. Separate the following into homologous and analogous organs
I. Sweet potato
II. Potato
III. Filippers of penguins and dolphins

IV. Hearts of different vertebrate
V. Forelimbs of whales, bat and cheetah
The correct option is

Homologous organs	**Analogous organs**		
a) I, II, III	IV, V	b) IV, V	I, II, III
c) I, II	III, IV, V	d) I, II, V	IV, III

205. *Echidna and Ornithorhynchus* are the connecting links between
a) Amphibians and aves
b) Mammals and amphibians
c) Reptiles and mammals
d) Reptiles and amphibians

206. Which one of the following is incorrect about the characteristics of protobionts (coacervates and microspheres) as envisaged in the abiogenic origin of life?
a) They were able to reproduce
b) They could separate combinations of molecules from the surroundings
c) They were partially isolated from the surroundings
d) They could maintain an internal environment

207. Find out wrong statement about *Homo habilis*
I. Also called able or skilful man
II. Also called tool marker
III. Fossil discovered from fast Africa
IV. 500 cc
V. Have teeth likes modern man
VI. Lined 2 million years ago
The correct choice is
a) Only IV b) Only V c) Only II d) Only VI

208. I. Random selection
II. Convergent evolution
III. Genetic drift
IV. Divergent evolution
Choose the correct option for Sewell's effect from above option
a) I and II b) III and IV c) Only III d) Only IV

209. Information molecule to get evolved first on the primitive earth was
a) Protein b) DNA c) RNA d) All of these

210. 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 NCERT statement
a) A-shrews. B-viviparous
b) A-monkeys, B-viviparous
c) A-monkeys, B-oviparious
d) A-shrews, B-oviparious

211. Ontogeny recapitulates phylogeny, this theory is called as
a) Biogenetic law
b) Law of embryology
c) Law of acquired characters
d) Law of bridges

212. Present concept of evolution is the result of the work by number of scientists
I. T Dobzhansky II. RA Fisher
III. JBS Haldane IV. Charles Darwin
V. Sewall Wright VI. Ernst Mayer
VII. Hugo de Vries VIII. GL Stebbins IX. Lamarck
The scientists who contributed to the present concept of evolution are
a) I, II, III, IV, V, VII, VIII b) I, II, III, V, VII, VIII, IX c) I, II, III, V, VI, VIII, IX d) II, III, IV, V, VI, VII, IX

213. What is the supportive evidence for evolution from comparative embryology?
    a) All plant seeds look alike
    b) All embryos arises by the union of egg and sperm
    c) Different species have different embryos
    d) Different species develops along the pattern set by their common ancestor
214. *Homo erectus* had large brain around ...A... cc. *Homo erectus* was probably ...B... . Here A and B refers to
    a) A-700 cc, B-carnivorous
    b) A-700 cc, B-herbivorous
    c) A-900 cc, B-omnivorous
    d) A-800 cc, B-herbivorous
215. 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 cc, 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
216. In plants like *Acacia*, the leaves are compound but their seedlings possess simple leaves. This phenomenon can be explained by
    a) Adaptive radiation concept by Darwin
    b) Theory of inheritance of acquired characters by Lamarck
    c) Recapitulation concept by von Baer
    d) Mutation theory by de Vries
217. *Australopithecus* has been given the nick name Lucy by
    a) Edward Lewis
    b) Donald Johanson
    c) LSB Leaky
    d) C Fuhlroti
218. Which of the following is not an example of evolutionary change?
    a) The dark form of many moth species has increased in areas with increased pollution
    b) Penicillin resistant forms of bacteria have arisen, by the introduction of antibiotics
    c) The last American eagle dies off, leading to the extinction of the species
    d) All of the above
219. Darwin travelled in which of the following ship?
    a) H N S Eagle
    b) D Matrica
    c) H M S Beagle
    d) Titanic
220. Flippers of seal are
    a) Modified forlimbs
    b) Modified hindlimbs
    c) Modified gill
    d) Modified fins
221. The cranial capacity of Peking man was about
    a) 900 cc
    b) 1660 cc
    c) 1075 cc
    d) 1450 cc
222. Resistant varieties evolved in much lesser time because of
    a) Natural selection
    b) Faster rate of mutation
    c) Anthropogenic (human) activities
    d) Random selection
223. Which of the following features are true for stabilizing type of natural selection?
    a) Selection of averaged individual
    b) It reduces variation
    c) It is bell-shaped
    d) All of the above
224. Homologous organs indicate the
    a) Convergent evolution
    b) Parallel evolution
    c) Common descendent
    d) Natural selection

225. Evolutionary convergence is the development of
    a) Common set of characters in a groups of different ancestry
    b) Dissimilar characters in closely related groups
    c) Common set of characters in closely related groups
    d) Development of characters by random mating
226. Which of the following is a pair of analogous organs?
    a) Contractile vacuole in *Amoeba* and uriniferous tubule in frog
    b) Paddle of whale and front legs of horse
    c) Mouth parts in insects
    d) Forelimbs in lizard and wings in birds
227. First evidence of ceremonial burial of dead body and belief in religion have been found with fossil of
    a) Neanderthal b) Cro-magnon c) *Homo erectus* d) *Homo habilis*
228. Which of the given pairs are correct
    I. Wings of insects and birds are homologous organ
    II. Wings of bats and bird are homologous organ
    III. Wings of insect and bats are analogous
    IV. Wings of insect and bird are analogous
    Choose the correct option
    a) I and II b) I and III c) I and IV d) II, III and IV
229. In a random mating population in equilibrium, which of the following brings about a change in gene frequency in non-directional manner?
    a) Selection b) Migration c) Mutation d) Random drift
230. The theory of pangenesis was rejected due to the acceptance of
    a) Spallanzani theory of biogenesis b) Richter theory of cosmozoic
    c) Cuvier theory of catastrophism d) Weismann theory of germplasm
231. There was no life in
    a) Cenozoic era b) Mesozoic era c) Palaeozoic era d) Azoic era
232. Why is the advent of reproductive isolation is important from an evolutionary standpoint
    a) When the organisms comprising two population of a species can no longer interbreed, the flow of genetic material between them stops
    b) It is not important from an evolutionary standpoint. The question is based on a false assumption
    c) Reproductive isolation increases the mutational rate
    d) Reproductive isolation may slow down reproduction
233. There are two opposing views about origin of Modern man. According to one view, *Homo eretus* in Asia were the ancestors of modern man. A study of variations of DNA however suggested African origin of modern man. What kind of observation on DNA variation could suggest this?
    a) Greater variation in African than in Asia b) Variation only in Asia and no variation in Africa
    c) Greater variation in Asia than in Africa d) Similar variation in Africa and Asia
234. A population containing a gene 'X' with two alleles 'Aa' is in Hardy-Weinberg equilibrium for gene 'X'. If the gene frequency of allele 'A' is 0.2, allele frequency of 'a' is
    a) 0.2 b) 0.42 c) 0.8 d) 1
235. 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 option
    a) I and II b) I and V c) III and IV d) IV and V

236. Which of the following presumably possesses a cranial capacity larger than modern man?
a) Neanderthal man b) Peking man c) *Australopithecus* d) Cro –magnon man

237. Hardy-Weinberg principle is the
a) Genetic structure of a non-evolving population
b) Genetic structure of an evolving population
c) Phenotypic structure of an evolving population
d) Phenotypic structure of a non-evolving population

238. Which of the following statement is correct?
a) Adaptation due to geographical isolation
b) Evolution of different species from a common ancestor
c) Migration of members of a species to different geographical areas
d) Power of adaptation in an individual to a variety of environments

239. Genetic drift in also known as
a) Hardy effect b) Weinberg effect
c) Hardy-Weinberg effect d) Sewall Wright effect

240. Which of the following is the first vascular plant to be represented by an extinct group?
a) Bryophytes b) Lycopods c) Conifers d) Cycads

241. The concept that the species have changed over long period of time is known as
a) Ecology b) Embryology
c) Spontaneous generation d) Organic evolution

242. Choose the wrong 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

243. Connecting links are organism which shows characters of
a) Its phylum only
b) Two groups (phylums)
c) Its class only
d) Its order only

244. The ratio of methane, ammonia and hydrogen in Stanley Miller's experiment was
a) 3 : 1 : 2 b) 2 : 1 : 2 c) 1 : 2 : 1 d) 5 : 4 : 1

245. Proteinoids are
a) Carbohydrate structure consisting of branched sugars
b) Fatty acid structure consisting of branched fatty molecules
c) Protein structure consisting of branched amino acids
d) Protein structure consisting of unbranched amino acids

246. Evolutionary history of an organism is known as
a) Phylogeny b) ancestry c) Palaeontology d) ontogeny

247. 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

248. Random genetic drift in a population probably results from
a) Constant low mutation rate b) Large population size
c) Highly genetically variable individuals d) Interbreeding within this population

249. Organs differ in origin but performing similar function
a) Analogous b) Homologous c) Vestigial d) Atavism

250. *Homo sapiens* were arose in
a) India b) America c) England d) Africa

251. '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) Opposite of stabilizing selection
c) Diversifying sekection
d) All of these

252. Formation of simple and less elaborated forms from the more complex and specialized one is called
a) Progressive evolution b) Microevolution
c) Macroevolution d) Retrogressive evolution

253. Natural selection means
a) Better adaptability b) Elimination of less adapted
c) Better survival d) All of the above

254. Which of the following statements are correct?
I. Directional selection favours one extreme form over the other extreme and over intermediate forms of a trait
II. Stabilising selection favours the intermediate forms of a trait
III. Disruptive selection favours both the extreme forms of a trait
IV. Fossils are the remnents of hard parts of life forms present in rocks
V. A study of fossils in different sedimentary layers indicates the geological period in which they live
VI. Radio isotopes are often used to determine the age of the fossils
VII. Study of fossils is called Palaeontology
VIII. Most fossils are found in sedimentary rocks
IX. The unit of evolution is population
a) All except I, III and X b) All except IV, V and II
c) All except VII, V and IX d) All of the above

255. ...A... is a binomial expression of $(p+q)^2$. When frequency measured, differs from the expected values, the difference indicates the extent of ...B...
Choose the option for A and B to complete the given NCERT statement
a) A$-p^2+2pq+q^2=1$; B-evolutionary change b) A$-p^2+2pq+q^2+q^2=1$; B-genetic change
c) A$-p^2+2pq+q^2\geq 1$; B-genetic change d) A$-p^2+2pq+q^2\leq 1$; B-evolutionary change

256. Which one of the following features occurs in the direction of the evolution for human species?
a) Well developed brain b) Opposable thumb c) Binocular vision d) All of these

257. The theory of random genetic drift was proposed by
a) Hardy –Weinberg b) R A Fischer c) Sewall Wright d) Mayr

258. How old is our universe?
a) 10 billion year old b) 20 billion year old c) 15 billion year old d) 5 billion year old

259. Which of the following defines Hardy –Weinberg law?
a) $p^2+2pq+q^2=1$ b) $p^2+2pq+q^2=1$ c) $p^2+2pq+q^2=0$ d) $q^2+p^2+2pq=0$

260. Correct order of evolutionary scale is
a) Palaeozoic → Archeozoic → Cenozoic
b) Archaeozoic → Palaeozoic →Proterozoic
c) Palaeozoic, Mesozoic, Cenozoic
d) Mesozoic → Archaeozoic→Proterozoic

261. The concept of inheritance of acquired character in support of evolution was proposed by
a) Darwin b) Cuvier c) Lamarck d) de Vries

262. *Peripatus* is a connecting link between
a) Ctenophora and Platyhelminthes b) Mollusca and Echinodermata
c) Annelida and Arthropoda d) Coelenterata and Porifera

263. Convergent evolution is shown by
a) Homologous organs b) Analogous organs c) Vestigial organs d) All of these

264. Which one of the following are homologous organs?
a) Wing of butterfly, wing of bird, wing of bat b) Forelimb of frog, wing of bird, forelimb of rabbit, flipper of whale
c) Thoracic leg of cockroach, hindleg of frog, forelimb of rabbit d) Wing of bird, wing of bat, wing of flying lizard

265. Fossilized faecal material of animals are known as
a) Coprolites b) Compressions c) Moulds d) Casts

266. Identify the phenomenon in which the members of a species do not interbreed with the members of other species or same species
a) Habitat species b) Geographical isolation
c) Temporal isolation d) Reproductive isolation

267. I. Use and disuse of organs
II. Inheritance of acquired characters
III. Branching descent
IV. Natural selection
V. Mutation
VI. Reproductive isolation
The two key concepts of Darwinism from the given options are
a) I and II b) III and IV c) V and VI d) IV and VI

268. Related species which are reproductively isolated but mophologically similar are called
a) Sibling b) Sympatric c) Allopatric d) Morphospecies

269. An important evidence in favour of organic evolution is the occurrence of
a) Homologous and vestigial organs b) Analogous and vestigial organs
c) Homologous organs only d) Homologous and analogous organs

270. Evolution is
a) Sudden change occurring in a population
b) Progeny with modifications
c) Discontinuous process
d) All of the above

271. The result of Miller's experiments were discussed in the book 'The Planets' written by
a) Sayere b) Harold Urey c) Huxley d) Stanley

272. Which of the following experiment suggested that simplest living organisms could not have originated spontaneously from non-living matter?
a) Microbes did not appear in stored meat
b) Larvae could appear in decaying organic matter
c) Microbes appeared from unsterilized organic matter
d) Meat was not spoiled, when heated and kept sealed in a vessel

273. Darwin asserted that ...A... which are heritable and which makes the resources utilization ...B... for few, will enable only those to reproduce and leave ...C... progeny
Choose the correct option for A, B and C to complete the given statement
a) A-variations, B-better, C-more b) A-variations, B-better, C-less
c) A-variations, B-normally, C-less d) A-variations, B-normally, C-more

274. Phenomenon in which the genetic drift gives rise to a new sample of population is called
    a) Founder's effect
    b) Divergent evolution
    c) Bottle neck effect
    d) Stabilizing selection
275. Genetic drift operates to
    a) Large isolated population
    b) Small isolated population
    c) Fast reproductive population
    d) Slow reproductive population
276. *Archaeopteryx* is a connecting link between
    a) Reptiles and birds
    b) Birds and mammals
    c) Amphibians and reptiles
    d) None of the above
277. Which one of the following is not a vestigial structure in *Homo sapiens*?
    a) Third molar
    b) Epiglottis
    c) Plica semilunaris
    d) Pyramidalis muscle
278. Which of the following was not explained by the Darwinism?
    a) Natural selection
    b) Struggle for existence
    c) Arrival of the fittest
    d) Origin of species
279. Creation of new taxa is focussed in
    a) Macro-evolution
    b) Theory of special creation
    c) Sympatric speciation
    d) Theory of pangenesis
280. Which of the following statement is correct?
    a) Stem cells are specialized cells
    b) There is no evidence of the existence of gills during embryogenesis of mammals
    c) All plants and animals cells are totipotent
    d) Ontogeny repeats phylogeny
281. Lung fishes, air breathing animals and corals predominated during the ….. period
    Complete the given statement by choosing an appropriate option
    a) Mississippian
    b) Silurian
    c) Devonian
    d) Jurassic
282. 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
283. Hand of man, wing of bat and flipper of seal represents
    a) Vestigial organs
    b) Analigous organs
    c) Evolutionary organs
    d) Homologous organs
284. Who wrote the famous book Origin of Species?
    a) Lamarck
    b) Darwin
    c) de Vries
    d) Mendel
285. According to the heterotroph hypothesis, the first life on the earth was able to
    a) Synthesis its food from inorganic compounds
    b) Feed upon carbohydrates produced by autotrophs
    c) Feed upon available nutrients in the environment
    d) Carry on photosynthesis instead of respiration
286. Which of the following events is an examples of evolution?
    a) Different finch species found of different Galapagos islands
    b) Remarkable rise in antibiotic resistant strains of bacteria
    c) Changes in guppy populations after the introduction of predators
    d) All of the above
287. The theory that evolutionary change is slow and continuous this phenomenon is known as
    a) Punctuated equilibrium
    b) Geographic isolation
    c) Speciation
    d) Gradualism
288. Links between organisms that shows branching pattern of evolutionary relationships are shown by
    a) Living fossils
    b) Comparative embryology
    c) Phylogenetic trees
    d) Two fossil layers

289. Which of the following is not Darwin's conclusion?
a) Survival of the fittest
b) Struggle for existence
c) Inheritance of acquried characters
d) Origin of species by natural selection

290. Which group of organisms is believed to be evolved first on earth?
a) Arthropods
b) Coelenterates
c) Protozoans
d) Reptiles

291. Artificial synthesis of ATP, porphyrin and nucleotides was detained by
a) Fox
b) Orgeal
c) Miller and Urey
d) Darwin

292. The biochemical analysis of different chlorophyll pigments in plants would be most useful in determining
a) How plants reproduce asexually
b) How plants pass favourable traits to their offspring
c) Why some plants produce haemoglobin
d) Which plants might have a common ancestor

293. Select the wrong statements
I. Swank-neck flask experiment was performed by Louis Pasteur
II. Louis Pasteur is famous for germ theory of disease
III. Louis Pasteur disapproved spontaneous theory forever
IV. Cosmozoic theory of origin of life was proposed by Richter
V. Theory of catastrophism was given by Georges Cuvier
Choose the correct option
a) I, II and IV
b) I, III and IV
c) III, IV and V
d) None of these

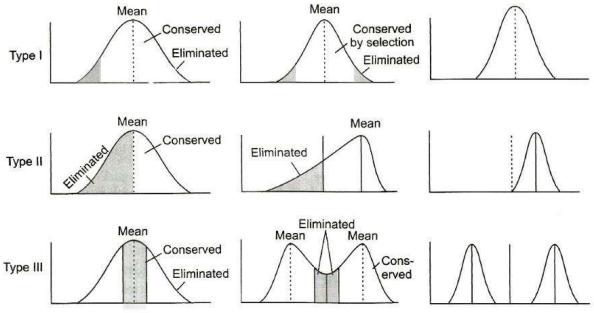
294. Percentage of homology in the haemoglobin of man and gorilla is
a) 97%
b) 96%
c) 99%
d) 98%

295. Hybridized sterile ($2n$) plant can be converted into a fertile species by doubling the chromosomes through induced polyploidy. Such plants are called
a) Diploid
b) Tetraploids
c) Amphidiploids
d) Amphitetraploids

296. Abiogenesis means
a) Origin of eukaryotes
b) Origin of life from living organisms
c) Origin of life from non-living organisms
d) Origin of prokaryotes

297. Pouched marsupials are found only in
a) New Zealand
b) Australia
c) Both (a) and (b)
d) Canada and Australia

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



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

299. Evolution is not continuous. It is a Jerky and a discontinuous process. This is the punch line of
a) Natural selection theory of evolution
b) Theory of acquired character
c) Mutational theory of evolution
d) Synthetic theory of evolution

300. 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 of adults

IV. Genetic drift is operated in small population
V. Genetic drift operates in large population
VI. Genetic drift upset 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

301. If frequency, of 'A' allele is 0.4 than, find out the frequency of 'B' allele and heterozygous genotype in a random mating population at equilibria
a) 0.6 and 0.24 b) 0.6 and 0.96 c) 0.6 and 0.48 d) 0.6 and 0.50

302. Darwin differentiate ...A... species of finches and grouped them into ...B... main types.
Choose the correct option for A and B to complete the given statement
a) A-six; B-thirteen b) A-fifteen; B-six c) A-seven; B-three d) A-fourteen; B-seven

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

304. First cell produced on earth is
a) Protobiont b) Protozoa c) Metazoa d) None of these

305. Biochemical similarities indicates the
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

306. Who proposed the Big-Bang theory?
a) Father Saurez b) Abbe Lemaitre c) Arno Allen Penzias d) Edwin P Hubble

307. Organic evolution means
a) Cumulative change of living population b) Progressive development of an organ
c) Development of different races d) History of human races

308. Fossil man, who made cave paintings, is
a) Java man b) Neanderthal man c) Cro –magnon man d) Peking man

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

310. Primary source of allelic variation is
a) Due to long periods of evolutionary changes b) Due to abrupt mutations
c) Suddenly on earth d) By seed dispersal

311. All organism shares the same types of proteins and biochemical pathways. This supports the fact that
a) Evolution occurs very fast b) Life began on earth a long time ago
c) All organism have common ancestry d) Evolution is an ongoing process

312. *Ornithorhynchus* is a connecting link between
a) Birds and reptiles b) Reptiles and amphibians
c) Birds and amphibians d) Fishes and amphibians

313. Analogous organs appears as the result of
a) Divergent evolution b) Progressive evolution
c) Retrogressive evolution d) Convergent evolution

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

315. Vestigial organ in human being is

a) Canine b) Hindlimb c) Incisor d) Premolar

316. The scientific name of Java man is
a) *Homo habilis* b) *Homo sapiens neanderthalensis*
c) *Homo erectus erectus* d) *Australopithecus boisei*

317. 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 mouse

318. Which theory arguments that life on earth came from outer space?
a) Theory of panspermia b) Cosmozoic theory
c) Spore theory d) All of these

319. Which of the following is the most primitive ancestor of man?
a) *Homo habilis* b) *Homo neanderthalensis*
c) *Australopithecus* d) *Ramapithecus punjabicus*

320. Presence of visceral pouches in the embryos of all vertebrates supports the theory of
a) Organic evolution b) Biogenesis c) Metamorphosis d) Recapitulation

321. A population exhibiting Hardy-Weinberg equilibrium possesses 25% recessive traits. Find out the frequency of recessive alleles in the gene pool of the same population
a) 0.5 b) 0.4 c) 0.3 d) None of these

322. Which of the following natural process is likely to fasten organic evolution?
a) Favourable environment b) Overproduction
c) Abundant genotypic variations d) Reproductive isolation

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

324. How might an evolutionary biologist why a species of salamander becomes blind after colonizing a cave?
a) It is possible that in the cave there is a source of pollution that increases the mutation rate for a gene that makes salamanders blind. Over time, due to exposure to this chemical, the members of the population lose their sight
b) Members of the ancestral population that colonized the cave differed in their ability to see. If maintaining the ability to see in the cave was a waste of energy, blind salamanders might actually have more offspring than those who could see
c) There is no to explain this in terms of natural selection
d) The members of this salamander species no longer needed to use their eyes. Over time, due to the lack of use, they lost the ability to see

325. Which one amoung the following is an example for homology?
a) Eye of *Octopus* and mammals
b) Tuber of sweet potato and potato
c) Wings of butterfly and birds
d) Thorn and tendrils of *Bougainvillea* and *Cucurbita*

326. Coacervates belong to category of
a) Cyanobacteria
b) Protozoans
c) Molecular aggregates
d) Molecular aggregate surrounded by lipid membrane

327. Which of the following sequences was proposed by Darwin and Wallace for organic evolution?
a) Over-production, constancy of population size, variations, natural selection
b) Variations, natural selection, over-production, constancy of population size
c) Over -production, variations, constancy of population size, natural selection
d) Variations, constancy of population size, over-production, natural selection

328. Fossils are useful in

a) Studying extinct organisms
b) Studying history of organism
c) Both (a) and (b)
d) None of the above

329. Biological concept of species is mainly based on
a) Reproductive isolation
b) Morphological features only
c) Methods of reproduction only
d) Morphology and methods of reproduction

330. 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 organism
IV. Origin of life from non-living organism
The correct combination is
a) I and II
b) II and III
c) III and IV
d) I and IV

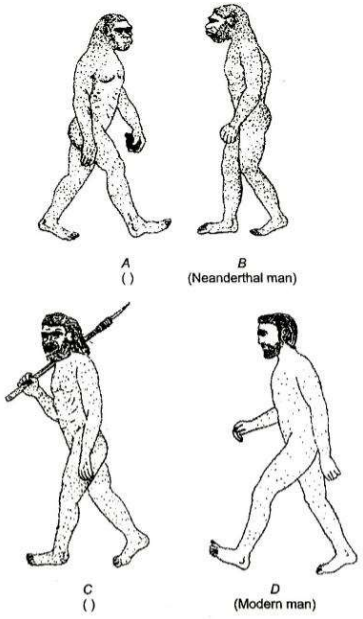
331. The brain capacity of *Homo erectus* was about
a) 650 cc
b) 900 cc
c) 1200 cc
d) 1400 cc

332. Single step large mutation leading to speciation is also called
a) Founder's effect
b) Saltation
c) Branching descent
d) Natural selection

333. According to Oparin, which one of the following was not present in the primitive atmosphere of the earth?
a) Methane
b) Oxygen
c) Hydrogen
d) Water vapour

334. What is the use of Electronic Spin Resonance (ESR) in fossil studies?
a) It helps to study the proteins in sedimentary fossils
b) It helps to revise the evolutionary period for different groups of organisms
c) It helps to study the enzymes present in sedimentary fossils
d) All of the above

335. In the given picture of human evolution, identify the missing stages, *i.e.*, *A* and *C*



a) A-*Homo erectus*; C-Cro-magnon man
b) A-*Homo erectus*; C-*Australopithecus*
c) A-Cro-magnon man; C-*Australopithecus*
d) A-Cro-magnon man; C-*Homo erectus*

336. Wings of birds and wings of flies perform similar functions so they are examples of
a) Homologous organ
b) Analogous organ
c) Evolutionary organ
d) Paralogous organ

337. Vestigial organs present in an adult individual are examples of ..... Basis of evidence of evolution.
a) morphological
b) Palaeontological
c) Embryological
d) Anatomical

338. Evolution that shift the allele frequency in a study consistent direction is called?
a) Directional evolution

b) Disruptive evolution
c) Molecular evolution
d) All of these

339. Bird with average sized wings survived in the severe strom but the short winged birds died. It shows
a) Stabilizing selection b) Gene flow c) Diversifying selection d) Founder effect

340. Cosmozoic theory was proposed by
a) Helmhontz b) Richter c) Pasteur d) Arrhenius

341. Major radiations of mammals, birds and pollinating insects took place in which epoch?
a) Oligocene b) Ecocene c) Pliocene d) Palaeocene

342. In the 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

343. Change of frequency of alleles in a population results in evolution. This statement is proposed in
a) Darwin's theory b) Lamarck's theory
c) Hardy –Weinberg principle d) de Vries theory

344. The first enzyme on the primitive earth was/were
a) Proteins b) DNA c) RNA d) Amino acids

345. Ancestor of man, who first stood erect, was
a) *Australopithecus* b) Cromagnon c) Java –ape man d) Peking man

346. Theory of special creation arguments that
I. all living organisms were created as such
II. the diversity was always the same since creation
III. earth is 4000 years old
Choose the right option to complete the given statement
a) I and II b) II and III c) I and III d) I, II and III

347. 'Use and disuse' theory was proposed by
a) Lamarck b) Darwin c) Hugo de Vries d) Malthus

348. What kind of variation contributes to the height of animals?
a) Somatogenic variations b) Discontinuous variations
c) Continuous variations d) Blastogenic variations

349. The most recent and direct prehistoric ancestor is
a) Cro –magnon b) Pre –Neanderthal c) Neanderthal d) None of these

350. Evolution for Darwin was gradual, while de Vries believed that mutations, caused speciation. The belief of de Vries supports the concept of
a) Saltation b) Evolution c) Genetic equilibrium d) Variance

351. Study of origin and development of humans in all their physical, social and cultural relationship is called
a) Zoology b) Anthropology c) Biogeography d) Zoogeography

352. Which of the following best shown the common origin of man and chimpanzee?
a) Chromosome banding b) Binocular vision
c) Cranial capacity d) Dental formula

353. Neo-geographic speciation can be found in
a) Parapatric speciation
b) Peripatric speciation
c) Allopatric speciation
d) Sympatric speciation

354. Which of the following statement are correct about *Homo erectus*
I. Had a large brain around 900cc
II. Appeared about 1.5 million years ago
III. Ate meat/omnivorous

IV. Evolved from *Homo habilis*

Choose the correct option

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

355. Evolution is
   a) Discontinuous process
   b) Continuous process
   c) Both (a) and (b)
   d) Non-essential process

356. Which of the following is an example of fossils?
   a) Pollen grains buried in the bottom of peat bogs
   b) The petrified cast of clam's burrow
   c) The impression, a clam shell made in mud, preserved in mudstone
   d) All of the above

357. Rapid evolution a number of new taxa in a short span of time due to large scale of environmental change is called
   a) Coevolution b) Quantum evolution c) Convergent evolution d) Divergent evolution

358. Which of the following statement describes that natural selection is not analogous to artificial selection
   a) Natural selection picks the fits organism, whereas in artificial selection, the breeder decide which organism will breed
   b) Natural selection depends upon the presence of variation while artificial selection do not
   c) Natural selection occurs within the population but it is not mendatory in case of artificial selection
   d) There is a limit of changes that can be brought by natural selection but no such limit exists for artificial selection

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

360. Select the incorrect statements
   I. Natural selection is essential for evolution
   II. Natural selection do not include variations
   III. Concept of natural selection was given by Hugo de Vries
   IV. Mutation is the sudden inheritable change
   V. Synthetic theory is also called Neo-Darwinism theory 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

361. Cro –magnon was
   a) Frugivorous b) Carnivorous c) Herbivorous d) Omnivorous

362. Urey –Miller's experiment mixture had the following except
   a) Methane b) CO_2 c) Hydrogen d) Water vapour

363. Life appeared
   a) 500 million years after the formation of earth
   b) 600 million years after the formation of earth
   c) Four billion years back
   d) Both (a) and (c)

364. Evidence that evolution of life forms has indeed taken place on earth has come from
   a) Fossils study (palaeontological evidence)
   b) Morphological and comparative anatomical study
   c) Biochemical study
   d) All of the above

365. Darwin in his 'natural selection theory', did not believed in any role of which one of the following in organic evolution?
   a) Struggle for existence
   b) Discontinuous variations

c) Parasites and predators as natural enemies d) Survival of the fittest

366. The first living beings were
a) Chemoheterotrophs b) Chemoautotrophs
c) Oxygenic photoautotrophs d) Anoxygenic photoautotrophs

367. Offsprings formed by the combination of new characters are called
a) Mutant b) Recombinant c) New variety d) All of these

368. Evolution is the
a) Disturbance in the genetic equilibrium
b) Disturbance in Hardy-Weinberg principle
c) Change in frequency of alleles in population
d) All of the above

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

370. Change of lighter coloured variety of peppered moths (*Biston betularia*) to darker variety occurred due to
a) Selection of darker variety for survival in smoke laden industrial environment
b) Deletion of gene
c) Industrial carbon deposited on the wings
d) Translocation of gene

371. Which of the following pairs is correct?
a) Bats wings and insect wings are analogous
b) Seal flippers and bats paw are homologous
c) Insect wings and bird wings are homologous
d) Thorns of *Bougainvillea* and tendrils of pea are analogous

372. Two key concepts of Darwinian theory of evolution are
I. branching descent
II. use and disuse of organs
III. natural selection
IV. somatic variance
The correct combination is
a) I and II b) III and IV c) I and III d) II and IV

373. Origin of different types of beaks occur due to
a) Natural selection b) Interspecific competition
c) Genetic drift d) Interspecific variation

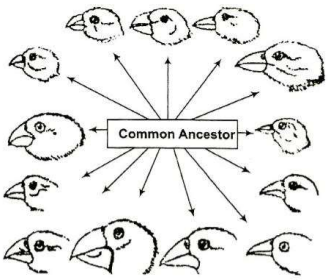
374. The early man whose skeleton is almost indistinguishable from that of modern man is
a) Neanderthal man b) Peking man c) *Homo erectus* d) Cro- magnon man

375. Coacervates were experimentally produced by
a) Urey and Miller b) Jacob and Monod
c) Fischer and Huxley d) Sydney Fox and Oparin

376. Which of the following evolved first on the primitive earth?
a) Viroids b) Coacervates c) Cyanobacteria d) Mycoplasma

377. Given below some major events in the early history of life
I. First heterotrophic prokaryotes
II. First eukaryotes
III. First autotrophic prokaryotes
IV. First animals
Choose the correct sequence of these evolutionary events
a) IV, III, II, I b) I, III, II, IV c) I, II, III, IV d) IV, I, II, III

378. Identify what is indicated in the given diagram?



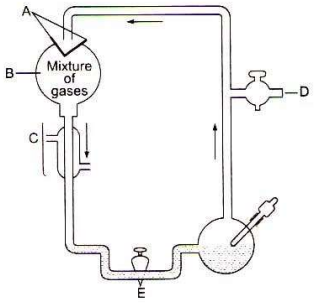
I. Natural selection
II. Adaptive radiation
III. Ecological succession
IV. Different species of finches by mutation

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

379. First dinosaurs and first egg-laying mammals were originated in

a) Jurassic period b) Triassic period c) Permian period d) Cambrian period

380. The diagram represent Miller's experiment. Choose the correct combination of labelling.



A-Electrodes
B – $NH_3 + H_2 + H_2O + CH_4$

a) C- Cold water
D- Vacuum
E- U-trap
A-Electrodes
B – $NH_4 + H_2 + CO_2 + CH_3$

b) C- Hot water
D- Vacuum
E- U-trap
A-Electrodes
B – $NH_3 + H_2O$

c) C- Steam
D- U-trap
E- Vacuum
A-Electrodes
B – $NH_3 + H_2 + H_2O + CH_4$

d) C- Steam
D- Vacuum
E- U-trap

381. *Philosophie Zoologique* was written by

a) Darwin b) Linnaeus c) Lamarck d) Theophrastus

382. Mark the correct statements

I. Fitness of individuals means reproductive fitness

II. Homology in vertebrae brain indicates common ancestry
III. Theory of acquired character was given by de Vries
IV. After industrialization, the white moth did not survive 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

383. Genetic basis of adaptation was performed by
a) Joshua Lederberg b) Carolus Linnaeus c) Mayer d) De Vries

384. Identify the cranial capacity *A* and *B* of the given primates

Primates	Cranial Capacities (in cubic centimetris)
1. Heidelberg man	1300 cc
2. Neanderthal man	*A*
3. Cro-Magnon man	1650 cc
4. Living Modern man	*B*

a) A-1300-1600 cc, B-1450 cc b) A-1200-1300 cc, B-1450 cc
c) A-1200-1300 cc, B-1600 cc d) A-1600 cc, B-1300-1600 cc

385. In which epoch, only modern humans prevails?
a) Pleiostocene b) Holocene c) Pliocene d) Micoene

386. Select the examples which favours the mutational theory of evolution
I. Ancon sheep II. Hornless cattle
III. Cicer gigas IV. Novel oranges
V. Hairless cat VI. Double toed cat
The correct combination is
a) I, II and III b) III, IV and V c) IV, V and VI d) I, II, III, IV, V and VI

387. Although all mammals have some common characters, but they shows conspicuous differences due to
a) Genetic drift b) Convergence c) Divergence d) Normalisation

388. A good example for recapitulation theory is
a) Embryonic membranes of reptiles b) Tadpole larva of frog
c) Placenta of mammals d) Canine teeth of frog

389. Which of the following pairs is correct?
a) Wings of kiwi b) Coccyx in man
c) Pelvic girdle of python d) Flipper of seal

390. Atavism is
a) Appearance of ancestral traits b) Loss of existing traits
c) Modification of existing characters d) Loss of new characters

391. The best description of natural selection is
a) The survival of the fittest
b) The struggle for existence
c) The reproductive success of the members of a population best adapted to the environment
d) A change in the proportion of variation within a population

392. Which one of the following amino acid was not found to be synthesized in Miller's experiment?
a) Glycine b) Aspartic acid c) Glutamic acid d) Alanine

393. 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 vapour 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, to NCERT textbook

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

394. Evolution occurs when
a) Genetic equilibrium is upset
b) Genetic equilibrium is not upset
c) No migration and genetic recombination
d) No mutation and gene flow

395. *Myrmecobius*and*Myrmecophaga* are closely related and have similar adapatations for the same habitat. This phenomenon is
a) Divergent evolution
b) Homoplasty
c) Convergent evolution
d) Parallel evolution

396. Galapagos islands are located in
a) Indian ocean
b) Pacific ocean
c) Atlantic ocean
d) Arabian ocean

397. 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

398. The finches of Galapagos islands provide an evidence in favour of
a) Special creation
b) Evolution due to mutation
c) Retrogressive evolution
d) Biogeographical evolution

399. ...A... of Russia and ...B.... of England proposed that the first form of life could have come from ...C... non-living organic molecule
Choose the right option for A, B and C to compete the given NCERT statement
a) A-Oparin, B-Haldane, C-Post-existing
b) A-Haldane, B-Oparin, C-Post-existing
c) A-Oparin, B-Haldane, C-Pre-existing
d) A-Haldane, B-Oparin, C-Pre-existing

400. Phrase 'Survival of the Fittest' was used by
a) Hugo de Vries
b) Charles Darwin
c) Herbert Spencer
d) Jean Baptiste Lamarck

401. The cranial capacity of modern man is
a) 430-650 cc^3
b) 600-100 cc^3
c) 900-1100 cc^3
d) 1200-1600 cc^3

402. Primary source of allelic variation is
a) Independent assortment
b) Recombination
c) Mutation
d) Polyploidy

403. Which of the following molecules falls under the category of eobionts?
I. Coacervates II. Microspheres
a) Only I
b) Only II
c) I and II
d) None of these

404. A baby has been born with a small tail. It is the case of exihibiting
a) Retrogressive evolution
b) Mutation
c) Atavism
d) metamorphosis

405. Prodigality of reproduction in Darwinism refers to
a) Every organism produces numerous offspring
b) Successful organism produce numerous offsprings
c) Only a few individuals are able to reproduce
d) Only a few individuals are able to survive

406. Which of the following is an evidence for Darwin's theory of common descent?

a) There are patterns in the fossil record that suggest that other species have diverged from a single ancestor species
b) There are biogeographic patterns in the distribution of species, for instance, distinct bird species on an island tends to resemble one another, suggesting a common ancestor
c) There are common stages in the early embryological development of organisms, representing several distinct vertebrate groups
d) All of the above

407. Which one of the following describes correctly the homologous structures?
a) Organs that have no function now but had an important in ancestors
b) Organs appearing only in embroynic stage and disappearing later in the adult
c) Organs with anatomical similarities but performing different functions
d) Organs with anatomical dissimilarities but performing same functions

408. Scientific name of Solo man is
a) *Homo soloensis* b) Neanderthal c) *Ramapithecus* d) *Homo erectus*

409. Genetic equilibrium refers to phenomenon that
a) The traits remains constant in a population
b) The total genes remains constant in a population
c) The total genes keeps on varying in a population
d) Traits keeps on varying in a population

410. Arrange the following events in a sequential order to describe the phenomenon of speciation
I. Over production rapid multiplication
II. Limited food and space
III. Struggle for existence
IV. Speciation
V. Inheritance of useful variation
VI. Natural selection/survival of the fittest
VII. Appearance of variation
The correct sequence is
a) I, II, III, V, VI, VII, IV b) I, IV, II, III, VI, VII, V c) I, II, IV, VI, III, VII, V d) I, II, III, VII, VI, V, IV

411. The sequence of events in geographic speciation is most likely to be
a) Genetic divergence → geographic barrier → reproductive isolation
b) Geographic barrier → genetic divergence → reproductive isolation
c) Reproductive isolation → genetic divergence → geographic barrier
d) geographic barrier → reproductive isolation → Genetic divergence

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

413. The highest cranial capacity is/was present in
a) Java man b) Peking man c) Handy man d) Modern man

414. Miller and Urey performed an experiment to prove the origin of life. They took gases $NH_3$and H_2 along with
a) N_2 and H_2O b) H_2O and CH_4 c) CH_4 and N_2 d) CO_2 and NH_3

415. Identify the correct sequence of stages in evolution of modern man/ *Homo sapiens*.
a) Australopithecus, Neanderthal man, Cromagnon man, Homo erectus and Modern man
b) Australopithecus, Homo erectus, Neanderthal man,Cromagnon man and Modern man
c) Homo erectus, Neanderthal man,Australopithecus, Cromagnon man and Modern man

d) Homo erectus, Australopithecus, Neanderthal man, Cromagnon man and Modern man

416. Which of the following is the most primitive ancestor of man?
a) *Homo neanderthalensi* b) *Homo habilis*
c) *Ramapithecus* d) *Australopithecus*

417. Trilobites were evolved during which of the following periods?
a) Silurian b) Cambrian c) Ordovician d) Precambrian

418. Darwin's finches provide an excellent evidence in favour of organic evolution. These are related to which of the following evidences?
a) Embryology b) Palaeontology (or fossils)
c) Anatomy d) Biogeography (or geographic distribution)

419. Analogous structures are
a) Anatomically different but performing similar functions
b) Anatomically similar but performing different functions
c) Anatomically similar and functioning similarly
d) Anatomically differentfunctioning differently

420. Mendel described the frequency of ...A... for offsprings of a single ...B...
Choose the correct options for A and B to complete the given NCERT statement
a) A-genome; B-mated pair b) A-chromosome; B-mated pair
c) A-gene; B-mated pair d) A-genotype; B-mated pair

421. All organisms shares the same genetic code. This commonality is an evidence that
a) The evolution is occurring now
b) The convergent evolution has occurred
c) The evolution occurs gradually
d) All the organisms are descended from a common ancestor

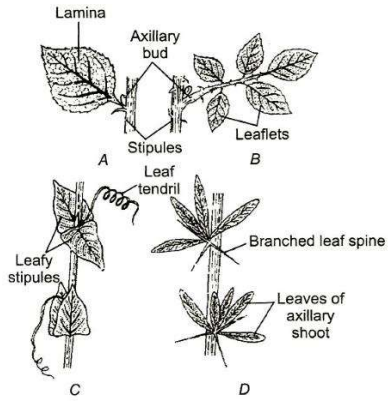
422. Homology refer to
I. Divergent evolution
II. Common descent
III. Convergent evolution
Choose the correct option
a) I and III b) II and III c) Only III d) I and II

423. Comparative anatomy and morphology shows ...A... and ...B... among organisms of today and those that existed years ago. Such similarities can be interpreted to understand whether ...C... ancestors were shared or not
Choose the correct option for A, B and C the complete the given NCERT statement
a) A-similarities, B-differences, C-common
b) A-similarities, B-differences, C-different
c) A-complexities, B-differences, C-different
d) A-complexities, B-differences, C-common

424. *Homo erectus* evolved about 1.7 million years ago. They used fire and tools and also used animal hides as clothing. The fossil of *Homo erectus* were named as
a) Neanderthal man b) Cro-magnon man
c) Java ape man d) *Proconsul*

425. Thorns of *Bougainvillea* and tendrils of *Cucurbita* are examples of
a) Analogous organs b) Homologous organs
c) Vestigial organs d) Retrogressive evolution

426. Diagram given below indicates



a) Analogous organs b) Homologous organs c) Convergent evolution d) All of these

427. First mammal occurred in which era/period?
a) Permian –Palaeozoic b) Triassic –Mesozoic c) Tertiary –Coenozoic d) None of these

428. Theory of spontaneous generation or abiogenesis was first disproved by
a) A R Wallace b) Francisco Redi c) Louis Pasteur d) A I Oparin

429. Primitive man was originated during
a) Miocene b) Holocene c) Pleistocene d) Pliocene

430. Modern synthetic theory is based on
a) Mutation b) Population c) Isolation d) All of these

431. 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

432. Which one is the largest ape among the given four genera of apes?
a) *Hyalobates* (the gibbon) b) *Simia* (orangutan)
c) *Pan* (chimpanzee) d) *Gorilla* (the gorilla)

433. When two species of different genealogy come to resemble each other as a result of adaptation, the phenomenon is termed as
a) Divergent evolution b) Micro-evolution
c) Co- evolution d) Convergent evolution

434. Which one of the following phenomenon supports Darwin's concept of natural selection in organic evolution?
a) Development of transgenic animals b) Production of 'Dolly' the sheep by cloning
c) Prevalence of pesticide resistance insects d) None of the above

435. Who first conducted experiment on evolution to prove biochemical origin of life?
a) Miller and Urey b) Darwin c) Lamarck d) Weismann

436. In Africa, there is a species of bird called the yellow-throated long claw. It looks exactly like the meadowlark found in North America, but they are not closely related. This is an example of
a) Uniformitarianism b) Artificial selection c) Gradualism d) Convergent evolution

437. Theory of pangenesis was given by
a) Darwin b) Lamarck c) Hugo de Vries d) Oparin

438. Krebs' cycle, glycolysis, lipogenesis, enzymes, all of these indicates
a) Biochemical evidence of evolution b) Morphological evidence of evolution
c) Anatomical evidence of evolution d) Biogeographical evidence of evolution

439. *Peripatus* is a connecting link between
a) Annelids and molluscs b) Reptiles and mammals
c) Annelids and arthropods d) Annelids and reptile

440. In Hardy-Weinberg law the homozygous dominant alleles, homozygous recessive alleles and heterozygous alleles are represented by

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

441. During the course of human evolution which part of the brain has shown maximum increase in size?
a) Midbrain b) Forebrain c) Hindbrain d) All of these

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

443. 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

444. Factor affecting the Hardy-Weinberg principles are
I. gene flow
II. genetic drift
III. mutation
IV. genetic recombination
V. natural selection
The correct combination is
a) I and II b) II, III and IV c) III, IV and V d) I, II, III, IV and V

445. First theory of evolution was given by
a) Charles Darwin b) Hugo de Vries c) Lamarck d) Wallace

446. The idea of natural selection as the fundamental process of evolutionary changes was reached
a) By Alfred Russell Wallace in 1901
b) Independently by Charles Darwin and Alfred Russell Wallace in 1859
c) Independently by Charles Darwin and Alfred Russell Wallace in 1900
d) By Charles Darwin in 1866

447. Mutation results in
a) Change in gene frequency
b) Stabilization of allele frequency
c) Change in phenotypic frequency
d) Stabilisation of selection pressure

448. Plants of the Galapagos islands show resemblance most closely to the plants of
a) Asia b) Australia c) North America d) South America

449. According to abiogenesis, life originated from
a) Non-living
b) Pre-existing life
c) Chemicals
d) Extra-terrestrial matter

450. Formation of more complex and specialized organisms from the simple and less elaborated forms is called
a) Retrogressive evolution
b) Progressive evolution
c) Microevolution
d) Macroevolution

451. Anthropogenic actions that leads to evolution is the use of
a) Herbicides b) Pesticides c) Antibiotics d) All of these

452. Which one is linked to evolution?
a) Extinction b) Competition c) Variation d) Reproduction

453. First seed plant appeared during which period?
a) Silurian b) Devonian c) Carboniferous d) Cretaceous

454. Organic compounds first evolved in earth required for origin of life were
a) Urea and amino acids
b) Proteins and nucleic acids
c) Proteins and amino acids
d) Urea and nucleic acids

455. The study of the homologous structures in mature organisms provides the evidence for the evolutionary relationships among certain groups of organisms. Which field of the study includes this evidence of evolution?
a) Comparative cytology b) Biochemistry
c) Geology d) Comparative anatomy

456. Which of the following statements are incorrect?
I. Microbial experiment shows that when the pre-existing advantagoeus mutations are selected they will result in the observation of new phenotypes. Over few generations, this would results in speciation
II. Neanderthal fossils represents a human relative.
III. In 1938, a fish caught in South Africa happened to be a coelacanth (lobe fins) which was thought to be extinct. These animals evolved into the first living amphibian on both land and water
IV. Lichens can be used as water pollution indicators
V. Alfred Wallace, a naturalist, who worked in Malay Archepalago (present Indonesia) had also came to the similar conclusion on natural selection as reached by Darwinism
The correct option is
a) I and II b) Only II c) V and IV d) Only IV

457. Which of the following was formed in S Miller's experiment?
a) Amino acids b) Nucleic acids c) UV radiations d) Microspheres

458. Which of the following is not a concept of Lamarck?
a) Environmental pressure causes variation
b) Rate and survival of organism is different due to variation
c) Inheritance of acquried characters
d) If an organ is used constantly it will continuously increase its size

459. 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

460. Which era is called the age of angiosperms?
a) Cenozoic era b) Mesozoic era c) Proterozoic era d) Palaeozoic era

461. *Dryopithecus* is also called as
a) *Parapithecus* b) Proconsul c) *Oreopithecus* d) *Pithecanthropus*

462. Darwin's finches are a good example of
a) Industrial melanism b) Connecting link
c) Adaptive radiation d) Convergent evolution

463. The animal called …… evolved into the first amphibians that lived on both land and water.
Complete the given statement by choosing an appropriate option
a) Invertebrate b) Coelacanth c) Amphioxus d) All of these

464. True statements regarding the genetic drift are
I. It mostly occurs in smaller population
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 statement is
a) Only I b) III and IV c) II and IV d) All except IV

465. Which of the following is an atavistic character?
I. Body hairs
II. Enlarged canines

III. Presence of six fingers
IV. Presence of tail in some babies
The correct combination is
a) I and IV b) I and II c) I and III d) I, II and IV

466. 'Population tends to increase geometrically, while food supply increases arithmatically'. This concept was put forward by
a) TR Malthus b) Struart Mill c) Charles Darwin d) Adam Smith

467. Which of the following phenomenon is difficult to explain in terms of natural selection?
a) Male peacocks evolve tail and feathers that makes them more vulnerable to predators
b) Male deer evolve antlers which do not help them to defend against predators
c) A bird issues a warning cry that puts it at greater risk of being noticed by a predator
d) All of the above

468. In Hardy-Weinberg principle expression of allele frequency is represented by
a) $(q+p)(q-p)$ b) $p^2+2pq+q^2=1$ c) $(p+q)^2=1$ d) Both (b) and (c)

469. Experimental evidence of chemical evolution was given by
a) Miller b) Haldane c) Oparin d) All of the above

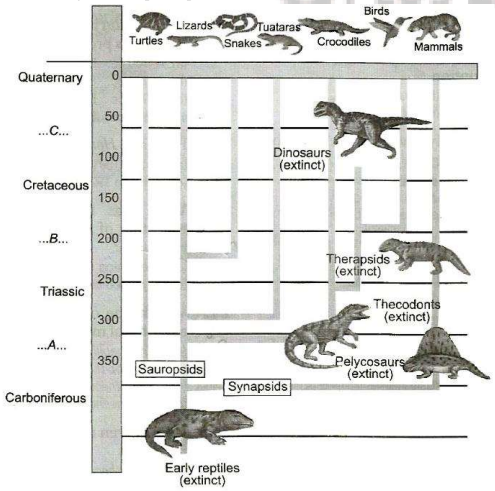
470. Sum total of all the allelic frequency is
a) 2 b) 1.5 c) 1 d) 0.5

471. Fossil of Cro-magnon man was found in
a) Southern France b) Northern France c) Northern Germany d) South Africa

472. In which era Protozoa, sponge and algae were originated?
a) Cenozoic era b) Azoic era c) Proterozoic era d) Mesozoic era

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

474. 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

475. Fitness according to Darwin refers to
a) Reproductive fitness b) Physiological fitness c) Spiritual fitness d) None of the above

476. The concept of adaptive radiation was developed by
a) Oparin b) Haldane c) HF Osborn d) Darwin

477. Eye of *Octopus* and mammals appears quite similar. They are
a) Homologous organs b) Analogous organs c) Vestigial organs d) None of these

478. Which of the following is the vestigial organ in human beings?
a) Nictitating membrane b) Spleen
c) Femur d) Tibia

479. How *Australopithecus* skull differs from the skull of modern man?
a) On the bases of skull's age b) On the bases of shape and size of skull
c) On the bases of length of skull d) All of the above

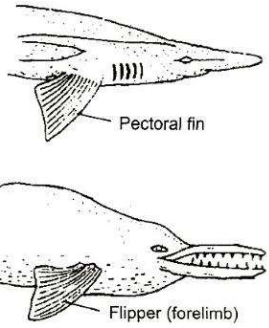
480. How might an evolutionary biologist explains why a species of birds has evolved a larger beak size?
a) Large beak size occurred as a result of mutation in each member of the population
b) The ancestors of this bird species encountered a tree with larger than the average sized seeds. They needed to develop larger beaks in order to eat the larger seeds and over time, they adapted to meet this need
c) Some members of the ancestral population had larger beaks than others. If larger beak size was advantageous, they would be more likely to survive and reproduce. As such, large beaked birds increased in frequency relative to small beaked birds
d) There is no way to explain such phenomenon in evolutionary terms

481. Which was absent in the atmosphere at the time of origin of life?
a) NH_3 b) H_2 c) O_2 d) CH_2

482. Atavism is found in
a) Animals b) Plants c) Both (a) and (b) d) None of these

483. Which of the following are the wrong statements
I. Organs which are different in basic structure and origin but performs similar functions are called analogous organ
II. Organs with different to basic structure and origin but perform similar functions are called homologous organs
III. Homologous organs lead to convergent evolution
IV. Analogous organ leads to divergent evolution
The correct combination is
a) I, III and IV b) I, IV and III c) I and II d) II, III and IV

484. Diagram given below indicates



a) Homologous organs b) Analogous organs
c) Atavism d) Divergent evolution

485. Two nucleotide sequences found in two different species are exactly the same. This suggests that these species
a) Are evolving into the same species b) Contains identical DNA
c) May have similar evolutionary histories d) Have the same number of mutations

486. The variation in the natural selection is on, it is due to the random mutations. What does this imply about the natural selection?
a) Natural selection is a random process b) Natural selection is nevertheless a directed process. The likelihood one variant will be favoured in a given environment over another is

predictable, even if the origin is not

c) Natural selection is a hypothetical process d) None of the above

487. Which of the following statements regarding the evolution of plants and animals is/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 wall deposits slowly
IV. About 65 million years ago dinosaurs died out
V. *Archeopteryx* is the connection 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

488. 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

489. Hugo de Vries based on his work on …A… brought forth the idea of …B…, large difference arising suddenly in a population. He believed that it is mutation which causes evolution and not the …C… that Darwin talked about. Mutations are random and …D…, while Darwinian variations are small and …E…
Choose the correct option for A, B, C, D and E to complete the given statement
a) A-evening primorse, B-mutations, C-minor variation, D-direction less, E-directional
b) A-evening primorse, B-mutations, C-minor variation, D-directional, E-non-directional
c) A-four O' clock plant, B-mutations, C-minor variation, D-directional, E-non-directional
d) A-four O' clock plant, B-mutations, C-minor variation, D-direction less, E-directional

490. Tendrils in plants are an example of
a) Convergent evolution b) Radiation c) Divergent evolution d) Co-evolution

491. *Australopithecus africanus* is also known as
a) First ape man b) Modern man c) Erect man d) Cro-magnon man

492. The natural selection that acts against change in the form and keeps the population constant through the time is
a) Directional b) Disruptive c) Not acting d) Stabilizing

493. 'A brief reduction in size of a population, due to natural calamities, usually leads to random genetic drift'. For this statement, identify the correct example from the following.
a) Human population of Pitcaim island b) Polydactylic dwarfs in Amish population
c) Long –necked giraffe d) Industrial melanism

494. Prehistoric cave art developed about …A… years ago. Agriculture came around …B… years back and human settlements started. Choose an appropriate option for A and B to complete the given NCERT statement
a) A-18000; B-2000 b) A-18000; B-10000 c) A-10000; B-5000 d) A-15000; B-5000

495. Amoug the human ancestors, the brain size was more than 1000 cc in
a) *Homo neanderthalensis* b) *Homo erectus*
c) *Ramapithecus* d) *Homo habilis*

496. In the origin of life, microspheres are most primitive protobiont, which have a membrane of
a) Lipids and proteins b) Lipids c) Carbohydrates d) fats

497. Neo- Darwinism is
a) Natural selection theory b) Modern mutation theory

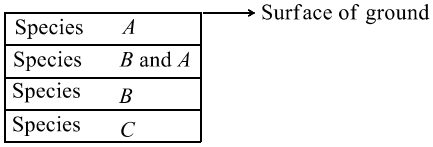
c) Modern synthesis theory d) Population theory

498. The abiogenesis occurred about how many billion years ago?
a) 1.2 billion b) 1.5 billion c) 2.5 billion d) 3.5 billion

499. *Australopithecus* existed in
a) Pliocene b) Miocene c) Pleistocene d) Both (a) and (b)

500. Which of the following statement is correct about *Australopithecus*
a) They lived in East African grassland
b) They hunted with stone weapons
c) They were transitional stage between ape and humans
d) All of the above

501. The diagram below represents a section of undisturbed layers of sedimentary rock in New York State and shows the location of fossils of several closely related species.
According to currently accepted evolutionary theory, which is the most probable assumption about species A, B and C?



a) Species B is more abundant than species C b) Species C existed before species B
c) Species A and B are genetically identical d) Species B descended from species A

502. Which of the following factor would affect the future population?
a) Mutation in sperm or egg b) Exercise daily
c) Mutation in somatic cell d) Mutation in somatic cells

503. Which of the following variations are temporary and have nothing to do with the last or next generation?
a) Hereditary variations b) Discontinuous variations
c) Environmental variations d) None of the above

504. Evolution convergence is characterized by
a) Development of dissimilar characteristics in closely related groups
b) Replacement of common characteristics in different groups
c) Development of a common set of characteristics in groups of different ancestry
d) Development of characteristics by random mating

505. Mutation introduces new genes into a species and brings about the changes in
a) Phenotypes b) Genotypes c) Both (a) and (b) d) None of these

506. The concept that the species have changed over a long period of time is know as
a) Ecosystem b) Spontaneous generation
c) Organic evolution d) Genetic recombination

507. 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

508. Which of the following is not a living fossil?
a) King crab b) *Sphenodon* c) *Archaeopteryx* d) *Peripatus*

509. *Homo habilis* originated in
a) Oligocene b) Miocene c) Pleistocene d) Holocene

510. In recent years, DNA sequences (nucleotide sequences) of *mt*DNA and Y-chromosomes were considered for the study of human evolution, because
a) Their structure is known in greater detail
b) They can be studied from the samples of fossil remains
c) They are small and therefore, easy to study
d) They are uniparental in origin and do not take part in recombination

511. Earth originated approximately
a) 4500 million years ago b) 3600 million years ago
c) Between 1600-2600 million years ago d) 2.5 million years ago

512. Gene flow takes flow by
a) Intrabreeding between one population to another
b) Intrabreeding between one population only
c) Intrabreeding between one population to another
d) Intrabreeding between one population only

513. 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

514. Which of the following is/are the most significant trend in the evolution of humans?
I. Shortning of eye
II. Bionocular vision
III. Tool making
IV. Increased cranial capacity
a) I and II b) Only IV c) III and IV d) Only I

515. Choose the homologous organs from the given options
I. Vertebrate hearts
II. Vertebrate brains
III. Thorn and tendrils of *Bougainvillea* and *Cucurbita*
IV. Vertebrate limbs
The correct combination is
a) I and II b) II and III c) III and IV d) I, II and III

516. Evolution is
a) Development of DNA from nucleotides. b) Development of organism through time.
c) Development of a cell from chemicals. d) cloning

517. Hardy –Weinberg principle explains
a) Genetic equilibrium b) Non-random mating
c) Evolutionary force d) All of these

518. Which of the following fossil man is named as handy man?
a) *Ramapithecus* b) *Australopithecus* c) *Homo erectus* d) *Homo habilis*

519. Which of the following is an example of vestigial structure?
a) Your tail bone b) Nipples on male mammals
c) Sixth fingers found in some human d) Human knee cap

520. Connecting link between ape and man is
a) Cromagnon man b) *Australopithecus* c) Neanderthal man d) Lemur

521. The theory of use and disuse of organ was proposed by
a) Darwin b) Lamarck c) de Vries d) Hooker

522. 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*

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

524. The classical example of adaptive radiation in development of new species is
a) Darwin's finches b) Marsupials of Australia

c) Giant turtle d) All of these

525. Mutational theory of evolution was given by
a) Charles Darwin b) Robert Brown c) Oparin d) Hugo de Vries

526. All the existing life forms share ...A... and share ...B... ancestors. The geological history of earth closely correlates with ...C... history of earth.
Choose the right option for A, B and C to complete the given statement with reference to NCERT text book
a) A-dissimilarities, B-dissimilar, C-zoological b) A-dissimilarities, B-dissimilar, C-botanical
c) A-dissimilarities, B-dissimilar, C-biological d) A-similarities, B-common, C-biological

527. Natural selection can lead to ...A... in which more individuals acquire mean character value, ...B.... more in which 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 to complete the given statement with reference to NCERT text book
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

528. Malay Archipalago 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

529. First life on the earth originated from non-living matters has been explained by
a) Theory of biogenesis b) Theory of abiogenesis
c) Theory of special creation d) Theory of extraterrestrial origin

530. The age of fossils or dating of fossils can be best estimated by
a) Radioactive carbon (C^{14}) dating method b) Radioactive nitrogen method
c) Radioactive clock method d) None of the above

531. Wings of insects and birds are
a) Analogous b) Homologous c) Vestigial d) Atavism

532. Dinosaurs were abundant during
a) Jurassic period b) Pleistocene period c) Devonian period d) None of these

533. Half-life of ^{14}C is ...A... material used in determining the age of fossil is ...B... . Here A and B refers to
a) A-5568 years; B-radioactive carbon b) A-10,000 years; B-carbon
c) A-1000 years; B-sulphur d) A-2000 years; B-iodine

534. How did George Cuvier accounts for the extinctions in nature
a) Extinctions never occur there are unexplored parts of the globe where the organisms that appears to have gone extinct may still live
b) Extinctions occur when the slow adaptations of the organisms overtime to their environment are not quick enough to help them respond to changing conditions
c) Extinctions occur at random, they do not reflect God's will
d) Extinctions occur due to the catastrophic events

535. Genetic equilibrium means
a) Gene pool remains constant b) Phenotypes remains constant
c) Migration of a species into new area d) Immigration of species

536. According to fossils discovered upto present time origin and evolution of man was started from which country?
a) France b) Java c) Africa d) China

537. What is the basis of Hugo de Vries theory of mutation?

a) Do not rule out natural selection theory
b) Opposes natural selection theory
c) Supports Lamarck theory
d) Opposes germplasm theory

538. Variations in a progeny takes place due to
a) Mutation
b) Recombination by gametogenesis
c) Gene flow or genetic drift
d) All of the above

539. Which of the following sets contain only homologous organs?
a) Whale's flipper, horse's forelimb, Human hand
b) Wings of butterfly, crow and insect
c) Horse's forelimb, insect wing, human hand
d) Vermiform appendix, body hair and patella

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

541. Darwin proposed the theory of
a) Inheritance of acquired characters
b) Natural selection
c) Recapitulation
d) Continuity of germplasm

542. A population is in Hardy-Weinberg equilibrium for a gene with only two alleles. If the gene frequency of an allele'A' is 0.7, genotype frequency of 'a' is
a) 0.21 b) 0.42 c) 0.36 d) 0.7

543. The theory of random genetic drift was proposed by
a) Sewall Wright b) Hardy-Weinberg c) R A Fisher d) Mayer

544. Vestigial organ in human being is
a) Common embryonic origin but perform different functions
b) Different embryonic origin but perform different functions
c) Common embryonic origin but perform similar functions
d) Different embryonic origin but perform similar functions

545. Genus *Homo erectus* includes three fossil (s) namely
I. Java ape man
II. Neanderthal man
III. Cro-magnon man
IV. Peking man
V. Heidelberg man
The correct options is
a) I, II and III b) II, III and IV c) I, IV and V d) III, IV and V

546. Inheritance of acquired characters comes under
a) Lamarckism b) Darwinism c) Neo- Lamarckism d) Neo -Darwinism

547. Which one of the following factor do not allows Hardy-Weinberg principle to operate?
a) Inbreeding b) Mutation c) No selection d) No migration

548. Which of the following statements is correct?
a) Organs which are different in basic structure and origin but have similar functions are called analogous organs
b) Organs which are different in basis structure and origin but have dissimilar functions are called analogous organs
c) Organs which are similar in basis structure and origin but have different functions are called analogous organs
d) None of the above

549. Stings of honey bee and the stings of scorpion are
I. analogous organs

II. heterologous organs
III. homologous organs
IV. vestigial organs
The correct combination is
a) III and IV b) II and III c) I and II d) I and III

550. Theoretically population size grows …A…, if everybody reproduced maximally and the fact that the population size in reality is …B…, means that there had been competition for resources
Choose the correct option for A and B to complete the given statement with reference to NCERT text book
a) A-geographically; B-unlimited b) A-exponentially; B-unlimited
c) A-exponentially; B-limited d) A-geographically; B-limited

551. Darwinism explains all the following except
a) Within each species, there are variations
b) Organisms tend to produce more number of offspring that can survive.
c) Offspring with better traits that overcome competition are best suited for the environment
d) Variations are inherited from parents to offspring through genes